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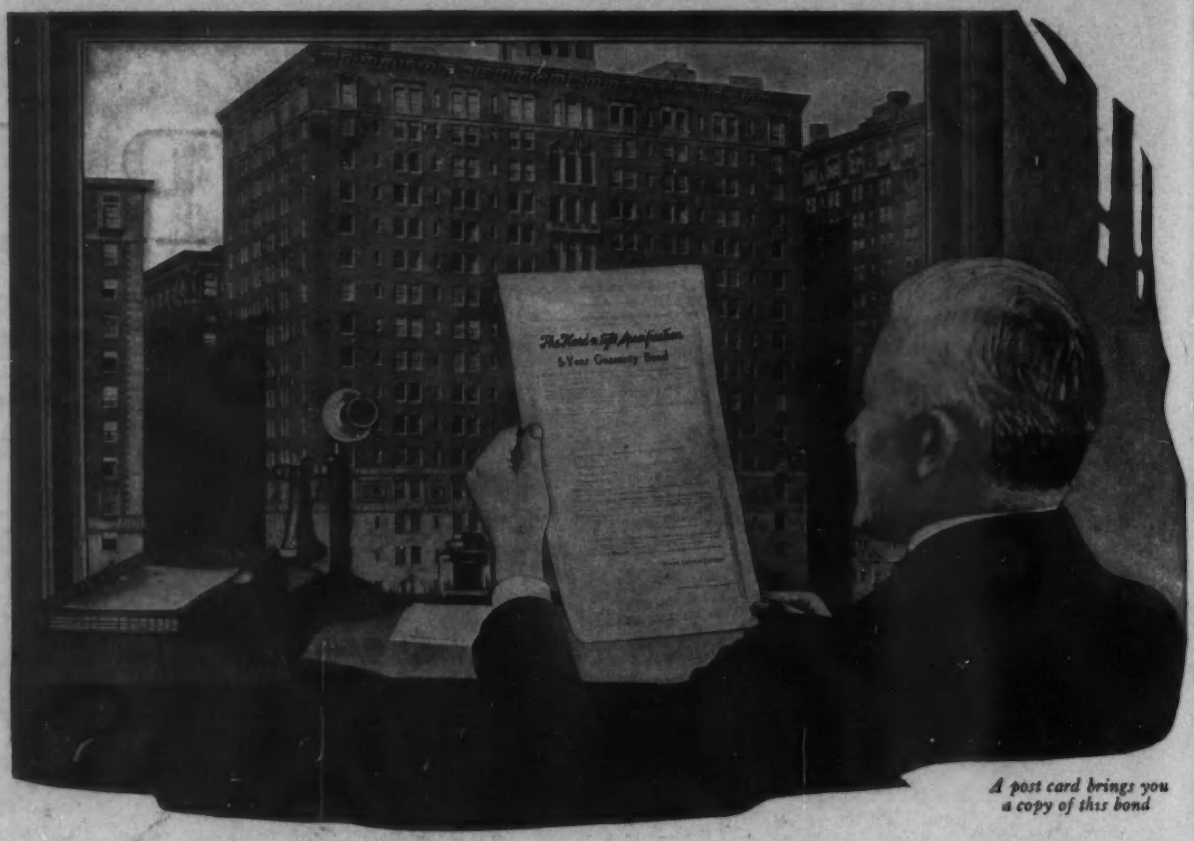
THE ARCHITECTURAL FORUM

NOVEMBER

1922



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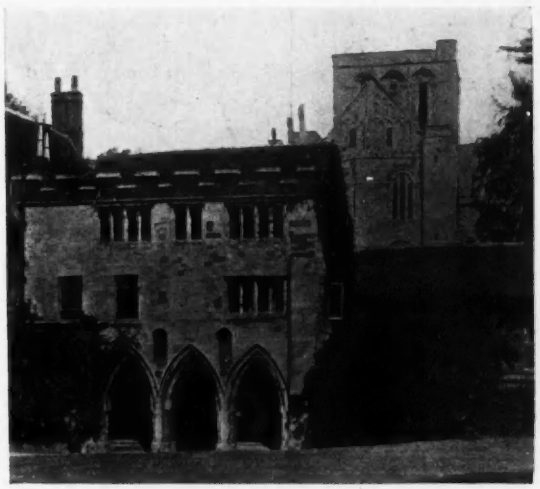
BOOK DEPARTMENT

A GUIDE TO ENGLISH GOTHIC ARCHITECTURE. By S. Gardner. 56 drawings in the text and 180 photographs. 6 x 10 ins. Price $5.25. The Macmillan Co., New York.

THE genius of the centuries of the later middle ages, from the eleventh to the fourteenth, worked the development of a different form of Gothic architecture for each country into which the use of Gothic forms had been carried. Even within the borders of a single land there might be many and subtle variations of design and mannerisms of construction, uses emanating from the chief cities of different provinces. France saw the development of many such schools, the Gothic of the Ile de France differing considerably from that of Burgundy, Anjou or Champagne, even during the period when Gothic architecture was at its height and when builders were diffusing the knowledge and making common property the achievements which experience had given them.

Different by far from the history of Gothic in France is its story in England. The conquest of England by the Normans, toward the end of the eleventh century, brought into England the manner of building which even then prevailed in Normandy, developed by that hardy race which had invaded northern France as barbarians, the destroyers of churches, murderers of priests and the ravagers of convents, but which within one brief century had not only embraced Christianity and the arts of peace but had absorbed the architectural knowledge of the conquered territory and were building in many parts of Europe the beautiful forms which we know as Norman. The same builders were to carry to England the Gothic architecture of France, and Normandy sent across the channel the best of her sons to be master craftsmen as well as bishops and nobles.



The Deanery, Winchester
From "A Guide to English Gothic Architecture"

In this work there are contained illustrations and descriptions of many of the religious structures built in England which stand as examples of the architecture of the late Norman and Gothic periods. The use of transitional forms and of the early English, decorated and perpendicular Gothic types, is made clear and definite and aids the student in gathering a clear idea of the history of this great movement which was destined to cover all Europe with a white mantle of churches. Because the building of its Gothic forms is so clearly the reflection of the temperament of a race it is important that the student recognize the points of divergence between the plans of the great cathedrals of France—Paris, Rheims, Chartres and Amiens—and the great structures which mark the culmination of English Gothic — the substitution for the apse and the *chevet*, made up of its encircling ambulatory and radiating chapels, of the square end with its great window which filled the entire east end of the sanctuary, and differences of design, such as the tendency of the French to use vast window spaces, thus diminishing the proportion of solid wall which was

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more customary in England. Then, too, the English cathedrals were situated differently from those of France, and were almost invariably built where much surrounding area gives opportunity for the emphasis of its architectural dignity; almost always the spacious area of close and other domain sets the cathedral apart from its town, as at Salisbury or Litchfield, or else its towers may dominate a height, as at Durham, in any case securing an opportunity for expression which could never be had by a French cathedral, intimate part and parcel of a town's life and so closely built around with domestic structures, as at Amiens or Rheims, that it is often impossible to secure an adequate view of the cathedral itself.

The method in which the work is arranged adapts it to the student's use, for it is planned according to subjects with the illustrations placed in chronological order. These illustrations include general interiors, spires, towers, porches, windows and doors, and numerous details of sculpture, such as capitals, foliage, bosses, corbels and figure subjects of different kinds.

Notwithstanding the number of works being published on the subject of Gothic it is not always easy for the student to obtain a really firm grasp upon its meaning, and particularly welcome is a work which renders more easily understood the theory and practice of architecture's supreme achievement.

HET MODERNE LANDHUIS IN NEDERLAND. By J. H. W. Leliman and K. Sluyterman. 236 pp., 8½ x 11½ ins., bound in cloth. Martinus Nijhoff, The Hague, Holland.

THE modern suburban or country house in Holland has undergone the transformation which has attended its development in every country, and this well printed and fully illustrated volume sets forth the result. With the well defined traditional domestic architecture of Holland as a foundation, the modern Dutch architects have evidently not been slow to adapt to their problems whatever in the architecture of other countries fitted in with their needs, and many of these well designed homes suggest that Holland as well as America has felt the influence of what is sometimes known as the "modern English" style, while certain others might almost have been photographed in the suburbs of Boston or New York.

An interesting characteristic of the greater number of these houses, almost all in country or suburbs, is the prevalence of brick as a building material, to be expected no doubt in a country where forests are but rare while brick has been in use for centuries. The illustrations prove that the Dutch have not lost their ancient skill in the use of brick and in its combination in pleasing manner with wood, tiles, stucco and the other materials which are combined with brick in other lands. An interesting detail of many of the illustrations is the use which they show of roofing materials—tile for the most part, though many houses are roofed with what closely resembles old fashioned thatch, which adds that touch of quaintness which Americans are apt to associate with the Netherlands. The floor plans of the various houses which are included show an arrangement not greatly different from what would be found in America, the chief difference being perhaps the apparent tendency toward planning a number of small rooms in the area where in America but one or two larger rooms would be preferred.

ARCHITECTURAL DRAWING. By Wooster Bard Field, Architect. 9 x 12 ins., 161 pp. Price $4. McGraw-Hill Book Co., Inc., New York.

EVEN the most skilled of draftsmen is apt to consider his knowledge incomplete. The technique of architectural drawing is so large in extent and in many of its phases so complicated in detail that the proper grasping of the subject may well occupy years of study, application and practice. To obtain a good working knowledge of the art many volumes of text and countless expensive plates would be required, since almost without exception these books and portfolios of plates each deal with but a single aspect of the subject and go into that at considerable length, which makes it necessary that the student have access to a well equipped library or else invest in a variety of more or less expensive works.

In this volume, prepared by the Assistant Professor of Engineering Drawing at the Ohio State University, an attempt has been made to provide for the student those things which might be regarded as the fundamentals of the initial stage of the subject, as well as a careful presentation of certain of the more important points which are not generally covered in the work of the schools, but left to be acquired by actual practice after the student has left school. The subjects covered are taken up in the order in which they are naturally presented at the drawing board, which would seem to be a logical and natural method of presenting them, since this sequence would also give the reader a comprehensive and well-ordered grasp of the entire process. First there is an explanation of the method of orthographic projection and its application to architectural drawing; this includes the relation of views, auxiliary projections, sections, developed views and intersections. Next in order there is a description of the instruments commonly used in drawing and consideration of the geometric solutions most employed by architects. The subjects of preliminary sketches, scale and detail drawing and the orders of architecture are then taken up. While upon the subject of scale drawings examples are given of typical drawings which show buildings of different materials and various methods of construction to present to the student the methods by which certain well known architects actually portray such buildings, knowledge of which is of value to draftsmen.

As a guide to the student a suggested course of study has been added, presented in view of the author's wide experience as a professor of engineering drawing. This course is made up in such a way as to serve as an outline for either a simple or a comprehensive program of study, and it gives the student a methodical order of procedure while making it optional with him as to the extent of his work in each of the departments concerned. The work deals primarily with architectural drawing, but suggestions are made for wider study in both architectural design and engineering. For most students an important subject during earlier days is lettering as applied to architectural work, and this subject has been treated at some length by Prof. Thomas E. French, also of the Ohio State University.

A work of this kind would be quite naturally intended primarily for the use of students of architecture, but it will be found invaluable as well to anyone concerned in any way with architectural work.

Small Houses of the Late Georgian Period

By STANLEY C. RAMSEY

A volume on the small country or suburban houses and town houses, detached or in rows, of the late eighteenth century type, suitable for American use today. The houses shown include those of stone, brick, stucco or clapboards and most of them are designed in the dignified, slightly formal style which marks the Georgian period; some of the buildings contain shops on the ground floors with living quarters above. The volume also contains illustrations of doorways, porticoes, balconies and wrought ironwork of the time.

This book contains no fewer than 130 carefully selected examples of small houses, all finely reproduced to a large size from photographs specially taken for the purpose.

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ALBERT J. MacDONALD, Editor

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THE EDITOR'S FORUM

PHILADELPHIA EXPOSITION

ON recommendation of the Engineers' Club of Philadelphia and the Philadelphia Chapter of the A. I. A., Paul Philippe Cret and E. B. Temple have been designated as architect and engineer, respectively, to take charge of the preliminary planning of the exhibition to be held in Philadelphia in 1926 in celebration of the 150th anniversary of the signing of the Declaration of Independence. In explaining the action of the Committee on Grounds and Buildings, headed by General Atterbury of the Pennsylvania Railroad, Colonel Franklin D'Olier, President of the Sesqui-Centennial Exhibition Association, said: "The purpose of this move is to work out a tentative plan of grounds and buildings on the Parkway-Fairmount Park site. Mr. Temple, in consultation with the Engineers' Committee, and Dr. Cret, in consultation with the Architects' Committee, and also with the approval of our association, will select their associate engineers and architects. They will form a small, compact, rapidly-working group of engineers and architects who will submit this plan at the earliest possible moment. Dr. Cret and Mr. Temple have volunteered their services as a matter of civic pride, and will act without compensation for this preliminary work."

HOSPITAL COMPETITION

AN interesting competition, open to architects and hospital superintendents, for the design of a small general hospital has recently been announced by *The Modern Hospital*, a monthly publication devoted to the interests of the hospital field.

Richard E. Schmidt, of the firm of Richard E. Schmidt, Garden & Martin, will act as professional adviser. The drawings will be judged by a jury consisting of two architects, two hospital superintendents and a graduate nurse, who has had experience as the superintendent of a small general hospital. Three cash prizes and two honorable mentions will be awarded, the prizes being first, $500; second, $300; third, $200. The drawings required comprise a perspective, two elevations and section, floor plans and plot plan arranged on three sheets.

Those intending to submit drawings are requested to register their names with *The Modern Hospital*, 22 East Ontario street, Chicago, and to apply for a detailed program. The final date for registration has been advanced to December 15, and the date for submitting designs to February 1, 1923.

ONE FORM OF PUBLIC SERVICE

THE value of carefully designed and well planned houses in establishing the character of a community is so universally acknowledged that it might seem to be unnecessary to dwell upon it. But the fact remains that only too often a prospective builder seeks to economize by leaving the planning of the house to a contractor who may have an "architectural department" of some kind, or else a plan is selected from a book of published designs which may or may not be of the character which would enhance the attractiveness of the locality in which the house is to be built. Everything is done, in fact, save the adoption of the obviously correct course and securing an architect to design the best house which architectural skill can provide.

It has often seemed that much might be accomplished were real estate boards or public organizations to interest themselves definitely in the improvement of building design. The raising of public standards and consequently of public values is in one way or another the *raison d'etre* of most public bodies, and what is more effectual in raising values than good architecture?

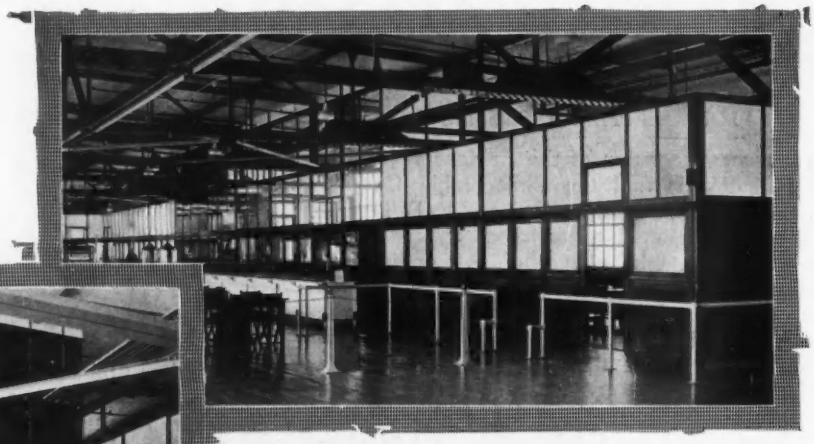
The Chamber of Commerce of Berkeley, California, has undertaken just this work by arranging for an advisory home building committee to which prospective home owners may come for suggestions. A small library of books and periodicals is to be formed for reference and supplying ideas, and names and addresses of local architects are given those who desire them. Considerable educational work must be done to improve the general standard of good taste and to bring the public to a proper valuation of good architecture, which of all the arts possesses the broadest appeal by coming most closely to the daily lives of the people.

THE MATTER OF SUB-CONTRACTS

THE Associated General Contractors of America have observed the tendency of some architects to divide their work into many small contracts and place them directly without the aid of a general contractor. Their Committee on Ethics has been requested to draw up a statement of conditions to discuss with the American Institute of Architects and other professional bodies. There is no desire on the part of architects to assume the duties of the contractor, excepting as they feel warranted by the failure of many general contractors to function according to expectations. A thorough discussion of the difficulty should help in arriving at the definite duties of each group.

LE BRUN TRAVELING SCHOLARSHIP

THE Le Brun Scholarship Committee of the New York Chapter, A. I. A., announces the holding of a competition for the award of this scholarship in 1923. Application and nomination blanks may be had of the secretary of any A. I. A. Chapter or of the Le Brun Scholarship Committee, New York Chapter, A. I. A., 215 West 57th street.



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The
ARCHITECTURAL
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VOLUME XXXVII NOVEMBER 1922 NUMBER 5

Architects' Vacation Sketches

INTERESTING EXHIBITION OF DRAWINGS BY ARCHITECTS AT BOSTON ARCHITECTURAL CLUB

DURING the latter part of September and the early days of October the great hall of the Boston Architectural Club was used as an exhibition room for a collection of sketches made by members of the club during the rambles and holidays of the past summer. The sole condition under which contributions to the exhibition were received was that the drawings were made during the vacations of this present year. The terms "sketches" or "drawings" were somewhat broadly interpreted, for some of the exhibits were drawings in pencil, crayon, charcoal, or pen and ink; a number were etchings or lithographs, while water colors were the medium in which a majority of the exhibits were made. The exhibition started with but two entries, but increased in scope day by day as new contributors brought in their work and installed it in place or as other contributors enlarged the number of their entries. Some of the exhibits had the added dignity of frames, while others were simply arranged on cardboard mounts. The informal manner of presenting the sketches rather added to their interest, when they were hung upon the long wall spaces of the great hall or else placed

Water Color of an Entrance Doorway
Grand Prize. By F. L. W. Richardson

upon benches when all the available spaces were covered, for the exhibitors were not professional painters but practical architects, who for the love of it had tried their hands at making pictures.

Of course there is a vast difference between the drawing which forms a large share of an architect's professional work and the drawing which is included in an exhibition such as this,—drawing which is practiced for the most part during the early days of one's career, or perhaps during foreign travels or while sojourning abroad. What generally follows as part of an architect's daily work is drawing of a much more technical and architectural character, more exact, necessarily drawn to a precise scale and so hedged about with restrictions of a practical or utilitarian nature that it is apt to lack the joyous freedom of movement, the spontaneity of feeling and the delicacy of touch which contribute so largely to the charm of sketches,—a charm which is necessarily absent in the usual drawing of an elevation. An architect's sketch is apt to be rather dry to a painter, who rebels at the restraint of rigidity of lines which necessity compels in most architectural drawing, and this rigidity is apt to become fixed when one's drawing is wholly of this character. What has been proved here, however, is that the faculty of easily handling drawing of a non-architectural character is by no means lost or always impaired by years of drawing of a more technical nature. Especial interest is found in the fact that these sketches are by architects and not by the younger draftsmen, who have lately been instructed in water color, and the exhibition serves two practical purposes in that it points the way to the younger men and proves to them that although the busy architect has but little opportunity for sketching, he still retains the ability necessary for it.

Water Color, Entrance, Old Mansion at Wiscasset, Maine
Second Prize. By Carroll Bill

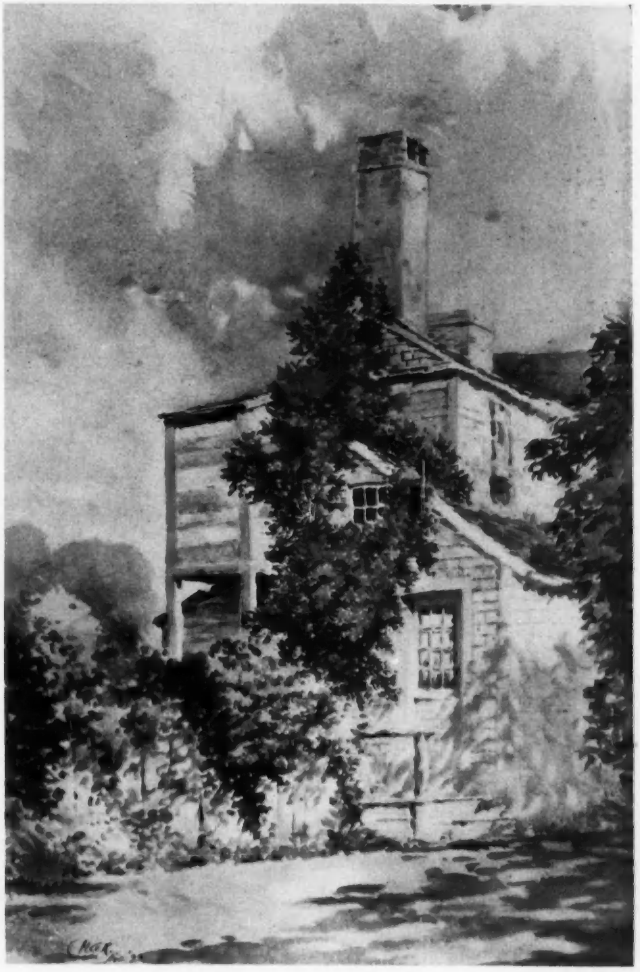
In addition to being produced in different mediums the items included in this exhibition were drawings of a wide variety of subjects, in which architectural character by no means predominated. With an architect's well-trained eye for the picturesque which lends itself to the purpose of a sketch there were selected many subjects in which buildings occur, but many were the sketches in which buildings were wholly lacking. Many

Water Color, Old Houses at Nantucket, Mass.
By Hubert G. Ripley
Mention

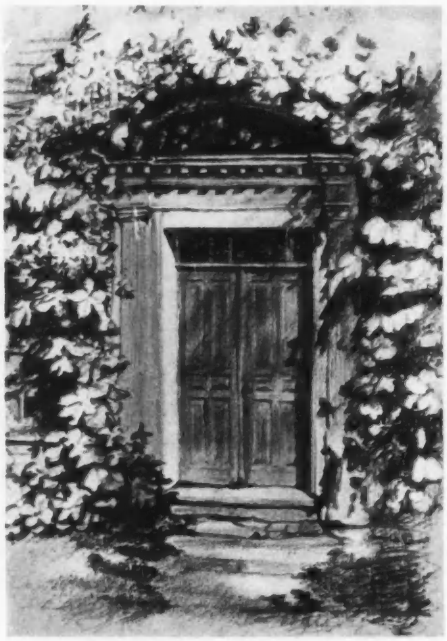
VACATION SKETCHES
BY BOSTON ARCHITECTS

At Right, Water Color, End of Old House at Nantucket, Mass.
By Hubert G. Ripley

Below, Etching, Old Custom House, Boston
By A. H. Hepburn



of the subjects, as might be expected, were chosen from among the quaint byways and forgotten corners which are still many in Boston, notwithstanding all the tearing down and building up which accompanies the march of progress. A. H. Hepburn contributed two delightful etchings, one of the west end of the state house as seen through Mt. Vernon place, and another of the heavy Doric portico of the old custom house. Views of bits not far away formed the subject of Carroll Bill's "An Old Mansion in Wiscasset, Maine," where the most sketchy



Pencil Drawing by Oliver P. Morton

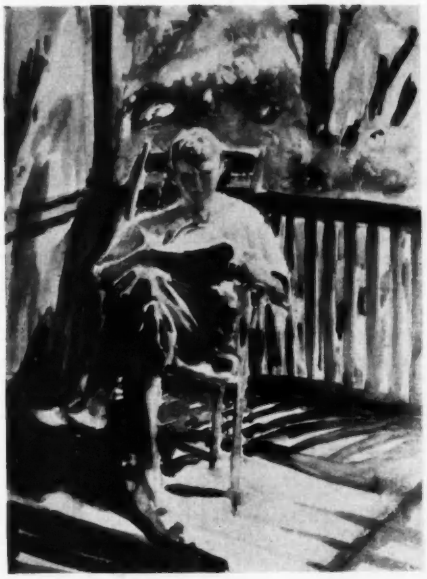
Water Color of an Interior
Second Prize. By Nelson Chase

of drawing was used, the shadows of trees playing across the front of an old white frame house possessing a most charming quality. Several delicate little water colors of bits along the Nantucket coast came from Hubert G. Ripley, one being a village street with a group of two small, prim New England houses with huge stack chimneys, and the other one end of a rambling old frame house overgrown with greenery which climbs the walls and twists itself about a tall brick chimney. Another bit sketched along the Massachusetts coast was the pencil drawing of an old colonial doorway embowered in green, by Oliver P. Morton, and other water colors were a "Boy on a Veranda" by James Clapp, and "Boys by a Brook" by Robert P. Bellows, and an interesting interior of an old dining room by Nelson Chase.

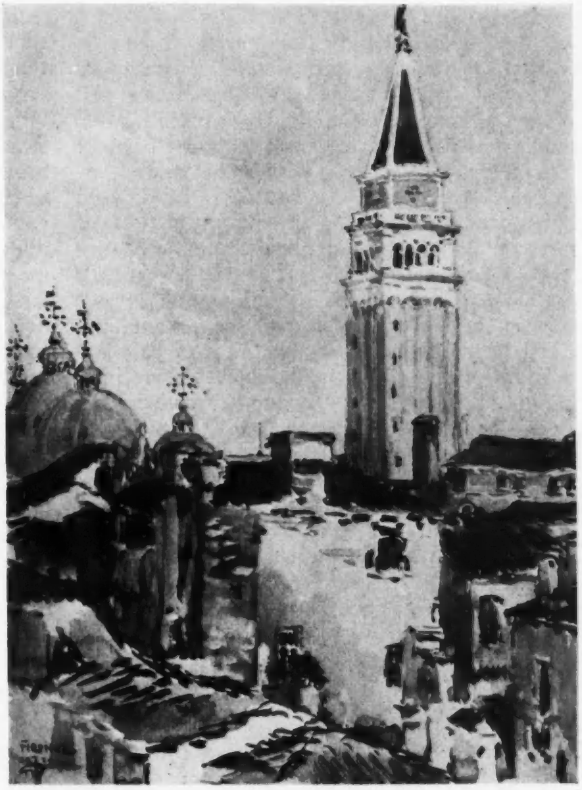
But not all of the exhibits were glimpses of details comparatively near at hand, for one very delightful water color was that by Timothy Walsh showing a view in Venice with the companile and several of the Byzantine domes of St. Mark's, while the water color which received the supreme prize, by F. L. W. Richardson, shows "An Entrance Door" which might have been sketched in Italy or Spain. Evidence of travel in other lands not as far distant as Venice or Spain is presented in a number of sketches by Ralph W. Gray of bits sketched in Bermuda; one is a fine little water view with rising clouds, a sketch which is broad and sure and as simple in its technique as it is admirable in its conception, while another is a study of the gnarled branches of old tamarisk trees, a sketch full of decorative quality. In several instances where a number of items were sent by the same contributor it was interesting to observe that they varied so greatly in color and method as almost to suggest the sketches having

VACATION SKETCHES

BY BOSTON ARCHITECTS

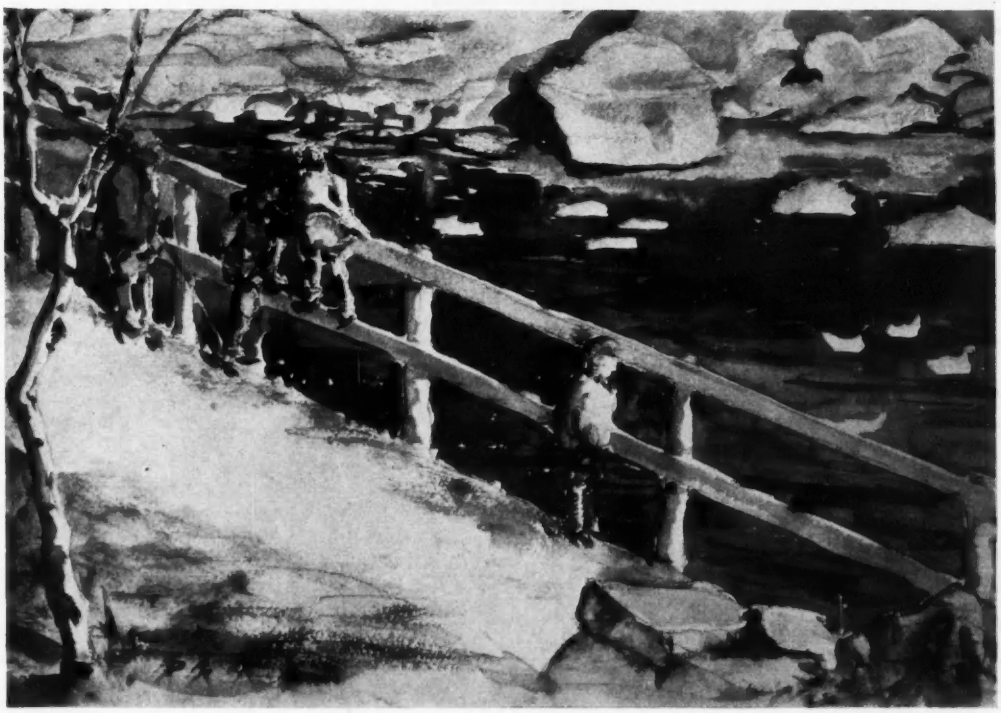


Water Color, Boy on Veranda
By James Ford Clapp
Mention



Water Color, Campanile, San Marco, Venice
By Timothy Walsh

Water Color, Seaside Pool
By Robert P. Bellows

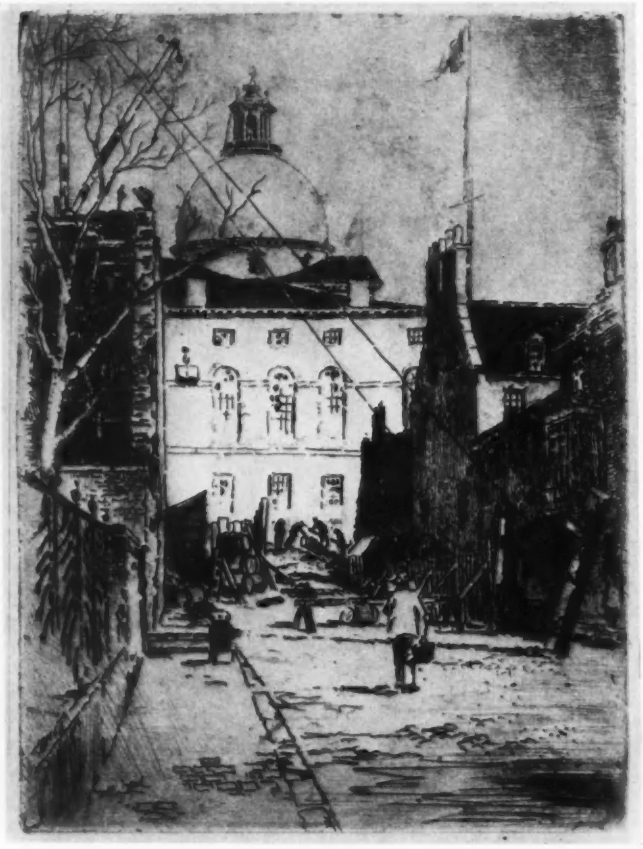


been made by different artists—direct contrasts of technique or the use of mannerisms so widely different that they show the use of several wholly different styles.

Of course as might have been expected with an exhibition so interesting prizes and even mentions were too few to be awarded to all the items well deserving of honors. The rough and tumble-down buildings which fringe the waterfront of Rockport and overhang the water's edge were painted in water colors by Frank A. Bourne; C. L. Pitkin sent a crayon drawing of the Quincy market in Boston, and from Walter H. Kilham came a number of tiny water colors of interesting bits in Boston's west end, where steep grades and unusual layouts of old streets sometimes bring about unexpected dispositions of buildings. From the brush of R. Clipston Sturgis came eight small sketches done in a remarkably brilliant style, showing old roads in and about Portsmouth; J. Lovell Little contributed two sketches of the woods in northern Maine, virile and emphatic in tone and technique, one particularly which showed through a group of gaunt tree trunks in the foreground a view of a distant lake and mountain. The first prize was awarded to F. L. W. Richardson for his water color "An Entrance Door"; second prizes were voted for exhibits in various mediums to Carroll Bill, Nelson Chase, O. R. Freeman, Ralph W. Gray, M. B. Gulick and A. H. Hepburn, while mention was given to W. T. Aldrich, James Ford Clapp and Hubert G. Ripley.

The enthusiasm which this exhibition of vacation sketches aroused among Boston architects, and the interest which it created upon the part of the press and the public in general, might well stimulate the holding of exhibitions of somewhat similar scope in other cities. There is hardly a town or city in America which does not offer interesting material for sketching, and local architects might welcome the pretext which such an exhibition would afford to renew contact with a field of work which may be in danger of being crowded out or forgotten in the daily work of the office.

In England it has for many years been the custom to encourage draftsmen to make sketches and measured drawings of the fine examples of old architecture in which England and the continental countries abound, for it has been found that the draftsmen are benefited by their own attempts and by comparison of their own work with that of others; it has also been found that such sketching tours are of benefit in another way, for intimate contact with fine work brings its own reward in heightened appreciation of detail, mass grouping, composition and other aspects of architectural work which finds expression in actual practice.



Etching,
Massachusetts
State House
from Mt. Vernon
Place, Boston

By A. H. Hepburn
First Prize in
Black and White
Medium

Mexican Renaissance

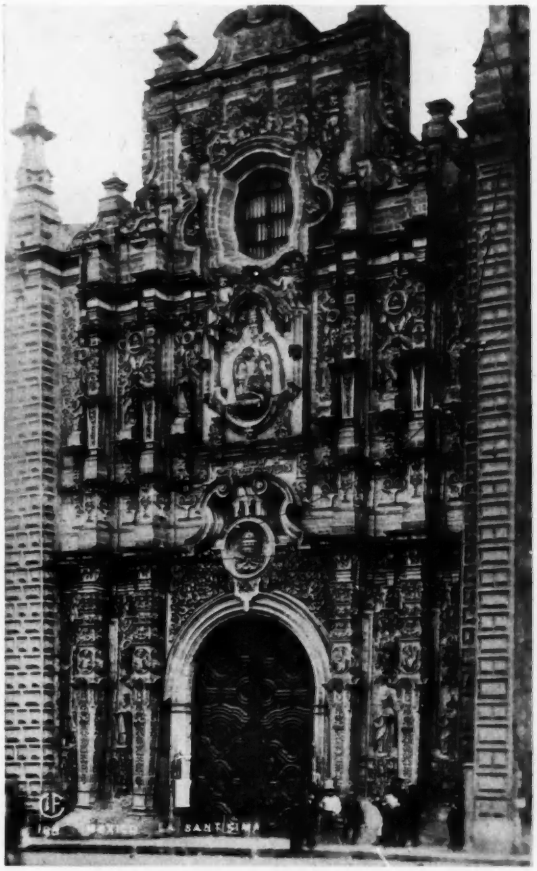
PART I

By WALTER H. KILHAM

A MODERN geography, in high favor at the present time in public and private schools, disposes of the architecture of Mexico with the statement that "the houses of the people have but one story and are commonly built of sun-dried bricks or adobe held together by layers of mud, the ceilings being made of brush and the floors nothing but earth or stone," qualifying the remark slightly by adding that "this description does not apply to wealthier and educated Mexicans, but even these have adobe houses which somewhat resemble those of southern Spain." When statements of this sort go unchallenged and are officially taught to the rising generation, it is not remarkable that the true story of architecture in that country remains generally unknown to our people.

As a matter of fact, it would be more correct to say that up to about 1820, the date of Mexican independence, Mexico was the only country on the American continent which practiced architecture at all in the real sense of the word, for prior to that time the buildings of the English colonies and the United States were comparatively small in size and slight in construction, with thin walls and wooden roofs, devoid of sculpture or mural decoration, and of a degree of artistic development which entitles them to consideration more for sentimental reasons than for any great merit, while those of the other Spanish settlements are generally of less artistic importance than those of Mexico, though ordinarily of solid and scientific masonry construction. This frugality of architectural output in the English colonies was of course due partly to the over-abundant supply of timber and partly to the scarcity of labor, for the native Indians were few in number and intractable at that; but it was also brought about by the fact that the English and Dutch settlers were not natural builders, as compared with the Latin races. In Mexico, however, these conditions were reversed. Good building stone was plenty, timber was scarce, and the populous native races, once conquered, proved surprisingly amenable to direction, when they were baptized and taken into the fold of the church. With an abundance of labor available the task of building notable and enduring structures was much simplified, but failure might even then have ensued if the directing race had not been endowed with unusual talent for the designing and construction of important buildings.

Of course a highly developed technique was not attainable at the beginning, and the early buildings, rude rather than elegant, sought to satisfy the most urgent needs rather than good taste and perfect convenience; a contemporary writer says of them that "so solidly were they built, one would say they were not houses but fortresses." Nevertheless, such buildings as the palace of Cortez at Cuernavaca or the Casa Alvarado at Coyoacan, both built within a very few years of the conquest (1521), even though the walls are of rather undue thickness and the arches low and squat, are of a far greater degree of sophistication from a constructional standpoint than anything produced in the American colonies before the revolution.



Portal of La Santísima Trinidad, Mexico City

While the bibliography of travel and politics in Mexico is considerable, and much study has been directed toward her prehistoric remains, very little serious work has been done towards presenting a complete story of the Spanish architecture of the viceregal period. Probably

Facade, Casa del Alfeñique, Puebla, Mexico

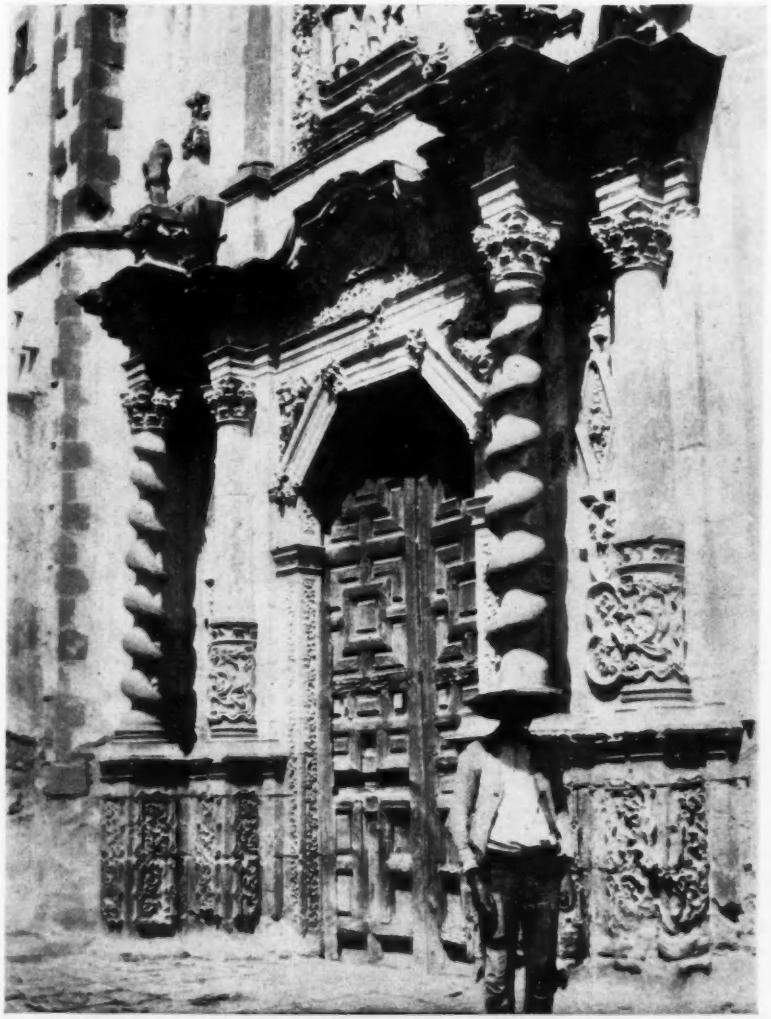
the best book on this subject, although it is all too brief, is the very interesting essay entitled "El Arte en México en la Epoca Antigua y durante el Gobierno Virreinal" by Lic. D. Manuel G. Revilla, published by the Mexican government in 1893. Other handbooks are those on "Arte Colonial" by D. Manuel Romero de Terreros, and the attractive "Monografias Mexicanas de Arte" by Jorge Enciso, Inspector General de Monumentos Artisticos. This author's title is worth noting, together with a passing speculation as to how long it will be before the United States will feel able to support an official of this description. It is interesting to remember also that none of the recent revolutionary governments has interfered with Señor Enciso's work. "The Spanish Colonial Architecture of Mexico," by Sylvester Baxter, is splendidly illustrated by photographs, but the real secrets of the design of this period can only be revealed by drawings, which so far are extremely scarce.

The new colony found it difficult at first to work up to the speed of the prevalent plateresque work in old Spain, which even there must have looked to the conservative hidalgos of the time about as startling as a cubist picture still does to the worthy critics of our own day. The earliest churches of Mexico, such as San Francisco and the Capilla Real at Cholula, either displayed vaults with ribs, reminiscences of late Gothic style in the one, or in the other a sort of replica of the Mosque of Cordoba, with 49 actual domes (*bovedas*) since raised on the original pillars, recalling the still recent Arabic influence in Spain, while the noble interior of San Juan Bautista at Coyoacan is a veritable basilica with its timber framed roof, massive square pillars and deeply worn flagstone floor.

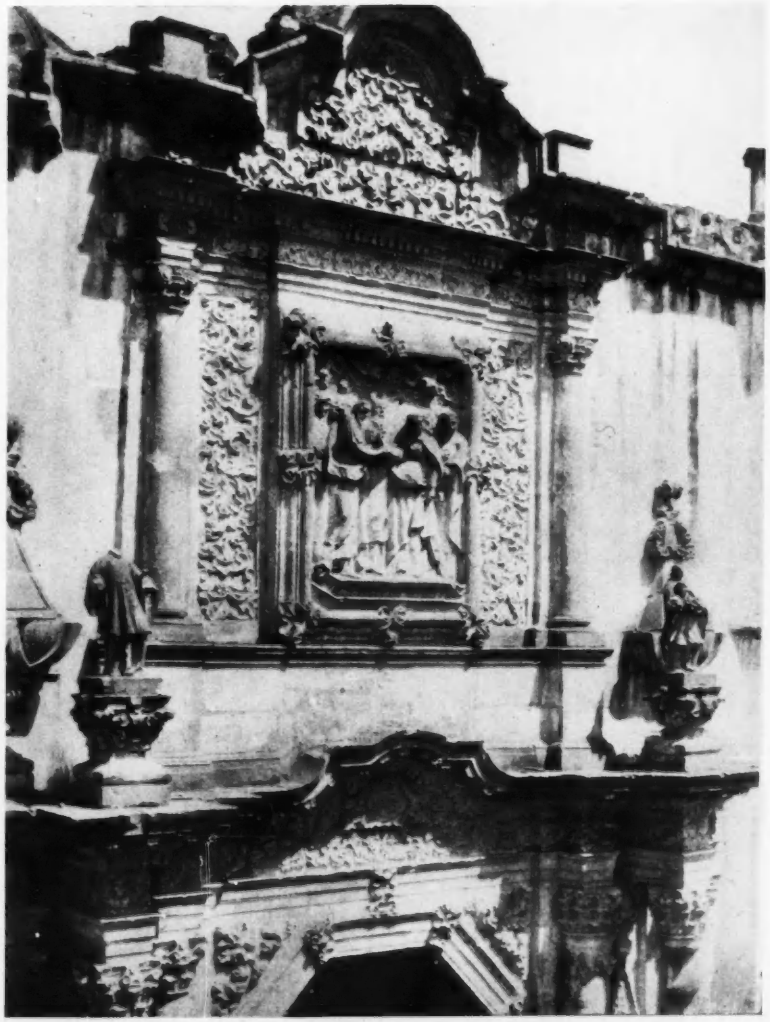
The true renaissance cruciform plan, with a dome or cupola over the intersection of nave and transept, very likely a reminiscence of the *cimborios* of old Spain, however, soon appeared and before the end of the sixteenth century prevailed universally in church design, while on every hand the growing wealth and power of the colony expressed itself in magnificent palaces and handsome public buildings as well as churches. "As builders, after the Romans come the Spaniards" is a saying in Mexico, which seems fairly truthful when one contemplates the extent of building operations carried on during the three centuries of Spanish supremacy. With the advent of the seventeenth century the colonial style swung into the full current of the prevailing *barroco*, with its capricious proportions, heavy and pompous members and broken pediments, a real style nevertheless, and in the hands of the Spaniards one of extraordinary character.

The eighteenth century was the apogee of New Spain. At that period its religious communities, nobility and principal citizens had acquired considerable fortunes. Numerous building projects were undertaken, and older buildings were remodeled in accord with the prevailing taste. The general decadence in Spain under the third Philip was reflected in her provinces, and the arts were not exempt. The *barroco* merged into the Churrigueresque, and the

Detail of Doorway, Casa del Alfeñique



DETAIL OF DOORWAY



CARVED BAS-RELIEF OVER DOORWAY

PORTAL OF CHURCH NEAR S. JUAN TEOTIHUACAN, MEXICO

FROM PHOTOGRAPHS BY WALTER H. KILHAM

two styles mingled so as to be almost indistinguishable. In both the relation of exterior decoration to the actual construction was often disregarded; the *barroco* retained the column as a decoration, though frequently with a twisted or figured shaft, while the Churrigueresque changed it to a pilaster, thicker above than below, and seeming to hang from its cornice rather than to support it. The members are decorated with complicated panels, friezes and garlands, and the pediments writhe in intricate convolutions which baffle the pencil of the sketcher; one is amazed at the imaginative power of the designers. Good examples of this riotous form of design are the two churches of the Sagrario and the Santísima Trinidad in Mexico City. The elaboration and intricacy of these designs are almost inconceivable to an American mind, but at the same time the harmony and proportions of the composition are never lost. In the facade of the Sagrario particularly, the framing of the gray mass of the portals between the plain flanking masses of pink *tezontle* throws the lively sculpture into the high relief characteristic of all Spanish work, whether at home or in the colonies, and emphasizes the brilliant light and shade on the carved stone. But not alone did the Spaniards direct the toiling natives who carved the fronts of these buildings. Motifs and details appear which never came from old Castile, and just as the conquered Arab impressed his taste on the cities of Spain, so did the poor Aztec workman in some mysterious way weave the pathos and genius of his lost race into the facades and towers which the conqueror claimed as his own.

Tower of La Concepcion
Mexico City

One is almost at a loss to choose examples of the baroque influence among the amazing examples of brilliant Mexican work; their number is legion, and I will confine my illustrations to two or three which have never before been published. One is the portal of a little *hacienda* church near Teotihuacan, far from any town or high road, which I happened on by mere chance. The twisted columns on either side of the door carry a coquettishly elaborated entablature topped by carved urns, and the whole supports an upper story consisting of a beautifully carved bas-relief framed by Corinthian columns and decorative side panels. It was interesting to note that the interior of this church, built on the plan of a perfect Greek cross, is entirely carried out in gray stone in a style of Doric chastity perfect enough to excite comment anywhere. San Domingo in Mexico City is another baroque facade of good proportion and elegant detail. The large figure panel above the portal is of particularly good execution.

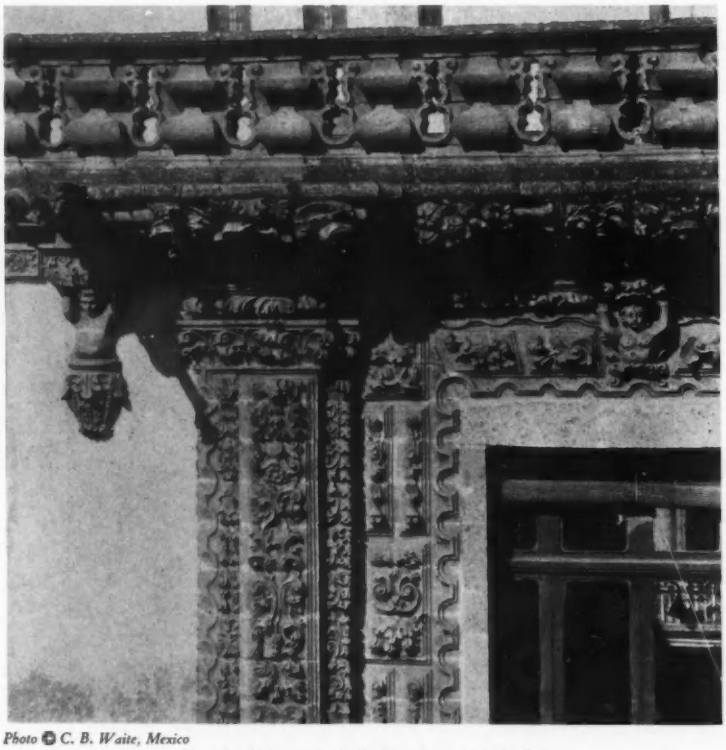


Photo © C. B. Waite, Mexico
Detail of House in Calle Manrique, Mexico City

Another form of the baroque is that which gives to the city of Puebla its distinctive and charming form of domestic architecture of which the well-known Casa del Alfeñique is the best example. Puebla, on the high road from Vera Cruz to the capital, was a great trading center between Mexico and Spain, and very probably due to its constant communication with Seville, the seat of the council of the Indies, its architecture shows a considerable influence of the Arabic or Mudejar style which manifested itself in the use of tiles for the facing of the exterior facades of the houses and in the widely projecting stone

cornices and *antipechos* or balconies, very thin and carved with the most elaborate profusion. Alfeñique is Spanish for "almond cake," and the name means "gingerbread house"; it is nevertheless one of the most beautiful domestic structures in the world. The patio, though small is of the greatest charm with its delicate ironwork, airy open stairway and graceful arches. A house nearby on the same street has a curious cornice in the shape of a succession of wagon tops sheltering a long balcony. The walls of these houses and many others in Puebla are of red unglazed tiles with insets of colored glazed tile in patterns, but the effect, while interesting, is not as striking or as beautiful as that of the famous Casa de los Azulejos in Mexico City, an excellent example.

The quality of the Spanish architecture, however, depends not at all upon its detail. The visitor, lost in a rather puzzled study of the elaborate church and palace facades, often fails at first to note how the enriched surface is always flanked by powerful buttresses of plain stone. The towers, whose bell chambers are always elaborately carved and decorated, never fail to rise from massive and simple bases, and their profiles are always noble, even if sometimes their nobility is tinged with a certain arrogance. The peculiar local method of hanging the bells which swing in the arches lends a characteristic flavor to the weatherbeaten old belfries, though due to the insistent cries for "reform" (how many crimes have been committed in that name!)

Photo © by C. B. Waite, Mexico

Detail of Stone Carving about Doorway, Church of the Sagrario, Mexico City

the bells of many an ancient church have gone to the melting pot or have even been sold to the Gringos. The photographs show the massive tower of La Concepcion in Mexico City and the Giralda-like shaft of the cathedral at Cuernavaca, but many other pictures would be necessary before the subject could be adequately presented.

The renaissance gave Mexico the dome which, always a striking feature, attains here an extraordinary development, always built of solid masonry, displaying its actual construction, without false inner or outer shell, and as it is employed in great numbers its use imparts a singular sweetness and majesty to the skylines of the cities. So numerous are these domes that one might almost say that the poorest pueblo in Mexico possesses a collection that, built as they are of solid masonry, would create an architectural sensation in New York even, and they were constructed with such facility that many churches possess five or six and, as just said, the Capilla Real at Cholula has actually 49. Some domes rise simply from the crossings above the curved vaults of the roofs, which in Mexico are exposed to the weather, no protective wooden roof being required. Others are raised on drums which may contain windows, which again may be treated with pediments or curved tops breaking into the base of the cupola. The dome itself may be flattened, as in the case of the cathedral at Puebla, or elongated vertically as in the Capilla del Pocito at Guadalupe (see THE ARCHITECTURAL FORUM for March, 1921), or it may be a regular half-orange as is usually the case. It generally carries a lantern (*linternilla*) and in many cases is covered with enameled tiles of blue, red and yellow, laid either in geometrical patterns or forming magnificent and grandiose coats of arms.

By the time the visitor has assimilated the relations of mass and outline to the applied ornament, he begins to discover that what he has been calling renaissance is in many cases not renaissance at all in the European sense of the word. Where in France, Italy or Spain are found such powerful contrasts of the shadows of deep-set window jambs with delicate mouldings? And the profiles of the mouldings themselves—what decision of line, what vigor in the smallest member! Surfaces ordinarily vertical are inclined outwards to catch the high lights,—overhangs are exaggerated to produce sharply ruled horizontal shadows until the whole facade seems to play and sport with the sunbeams like a tossing fountain. Everyone knows that in sparkle and brilliance the early renaissance of other countries is a dull thing compared with that of Spain; the possibilities of the later renaissance should be studied in Mexico. Note for example the carving of the detail of the building in the calle Manrique in Mexico City, once the palace of the Condé de Heras. The crispness and brilliance of the carving is beyond criticism. The play of the scrolls of the arabesques, the serpent-like ornament between the posts of the balustrade, and the masks at the top of the corner ornament are certainly as pre-Spanish as any ornament can be, while the relief of the ornament is heavier than that of the usual renaissance. The spirit of the detail is Aztec, the effect renaissance.

Photo © by C. B. Waite, Mexico

Cathedral at Cuernavaca, Mexico

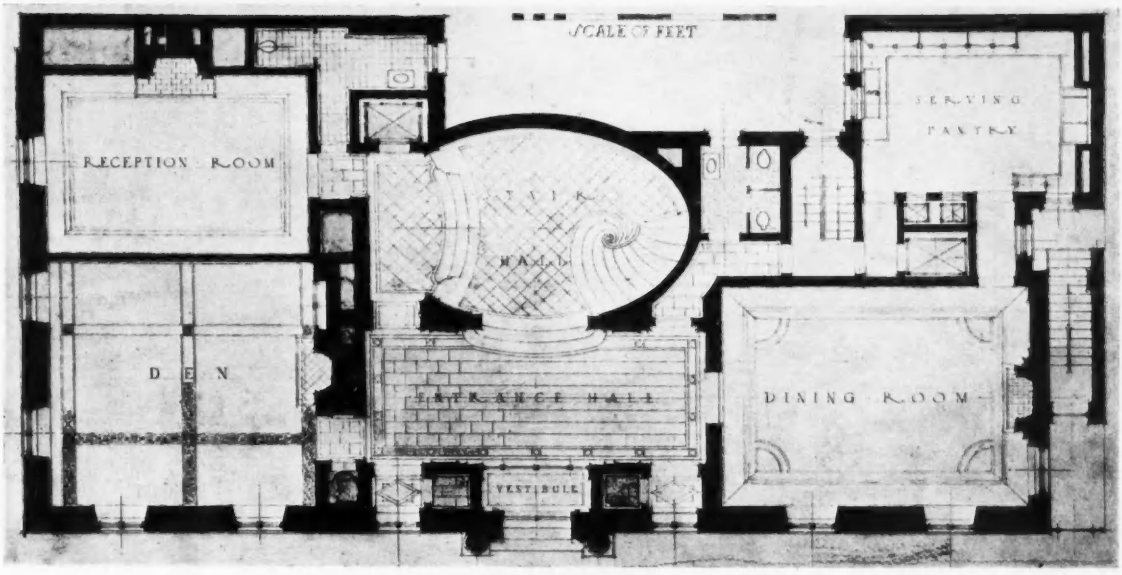
Photographs by Mattie Edwards Hewitt

DETAIL OF ENTRANCE

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT

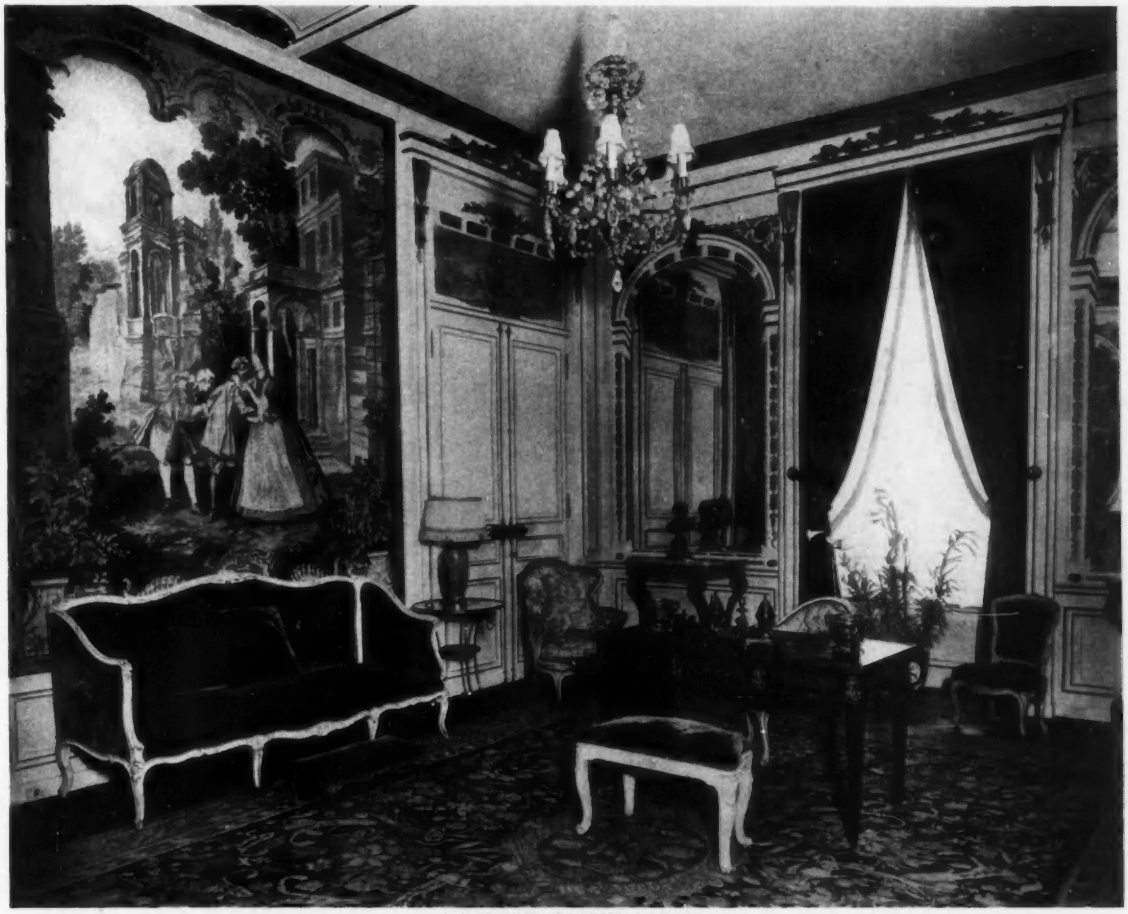
GENERAL EXTERIOR VIEW



FIRST FLOOR PLAN

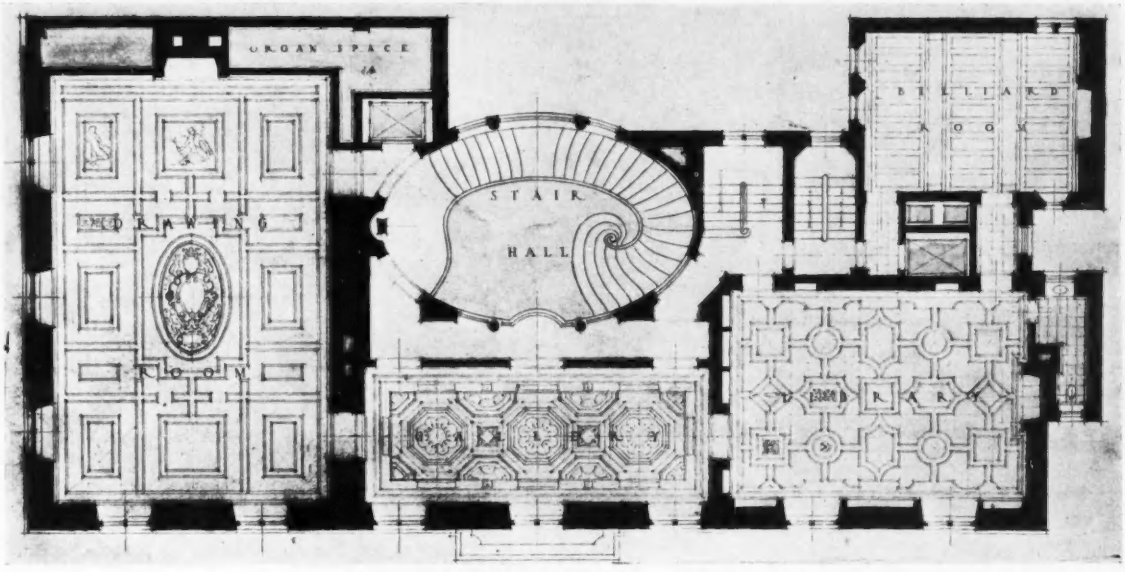
HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT



LOUIS XVI RECEPTION ROOM

Arthur S. Vernay, Decorator



SECOND FLOOR PLAN

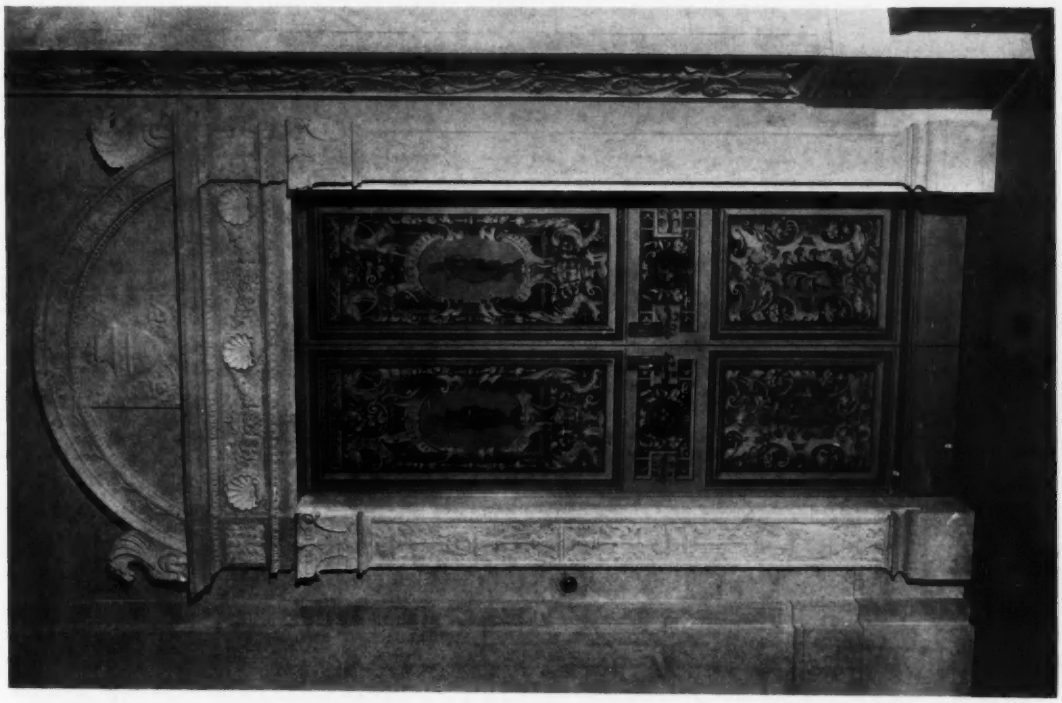
HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT

STAIR HALL

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT



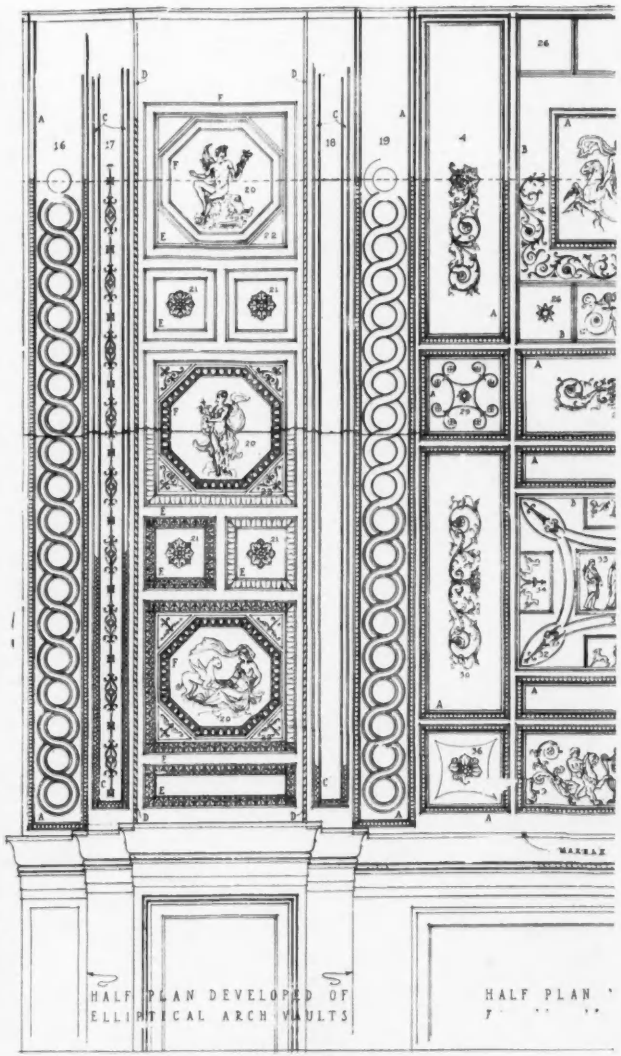
ELEVATOR DOORWAY

STAIR HALL

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT

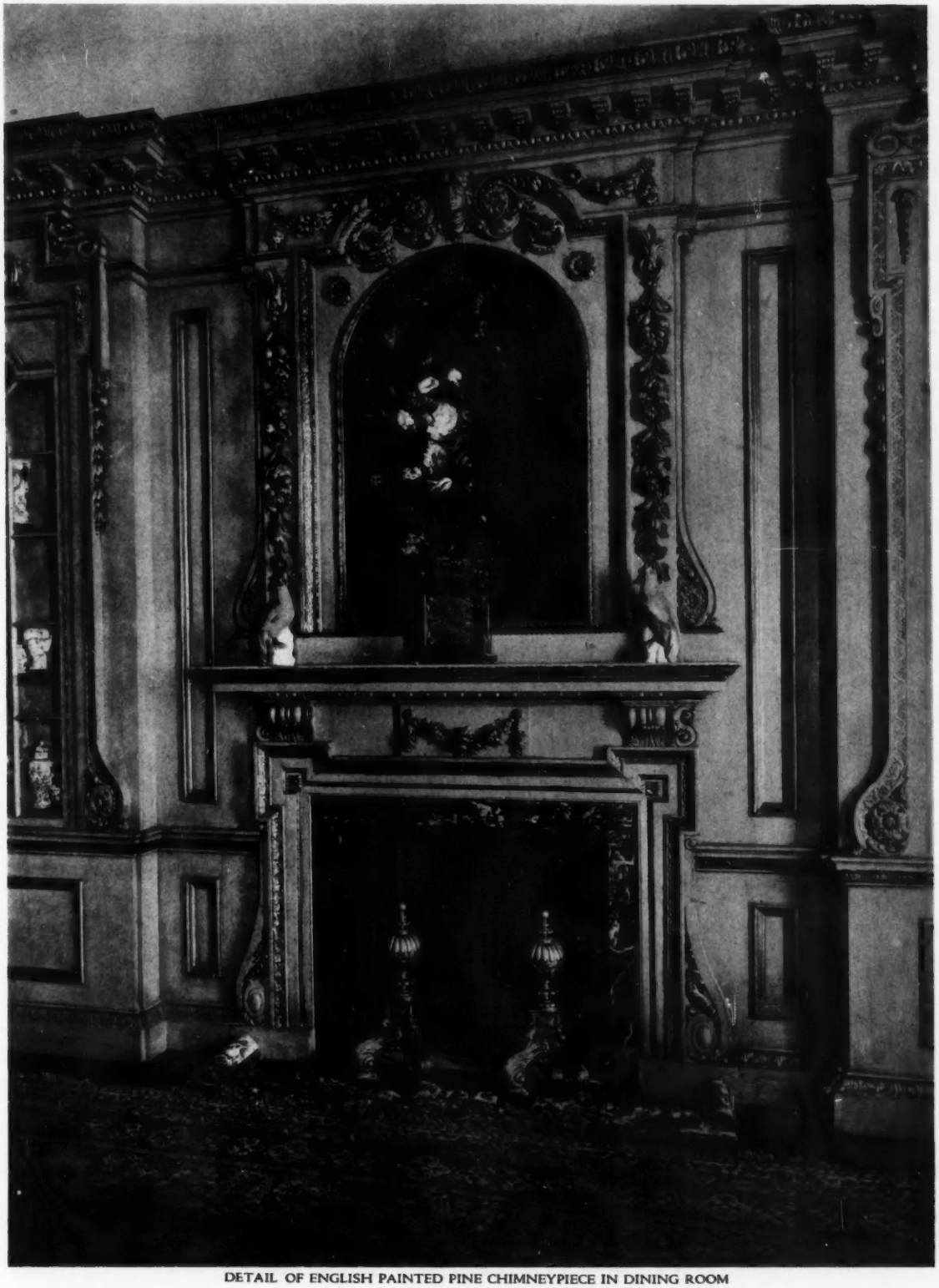
ENTRANCE HALL



DETAIL OF PLASTER CEILING

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

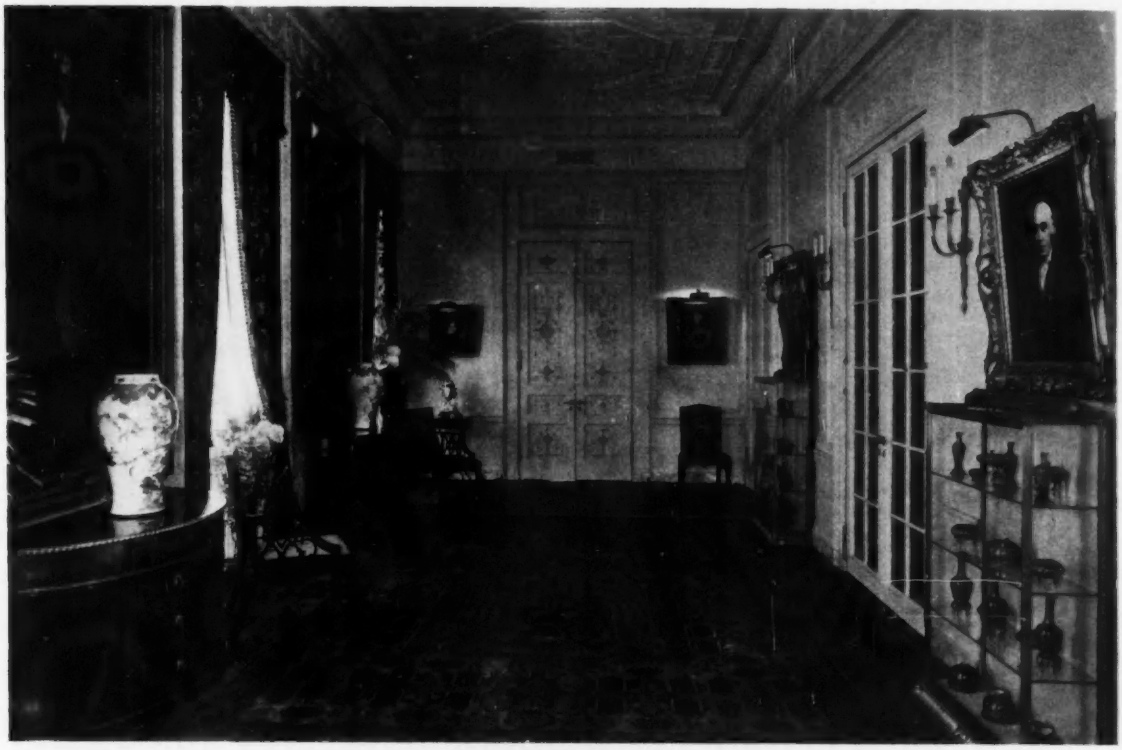
GUY LOWELL, ARCHITECT



DETAIL OF ENGLISH PAINTED PINE CHIMNEYPIECE IN DINING ROOM

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT



SECOND FLOOR GALLERY

PLAYROOM ON ROOF

Mural Decorations by Robert Winthrop Chanler

HOUSE OF MRS. WILLIAM HAYWARD, NEW YORK

GUY LOWELL, ARCHITECT

ITALIAN RENAISSANCE DETAILS

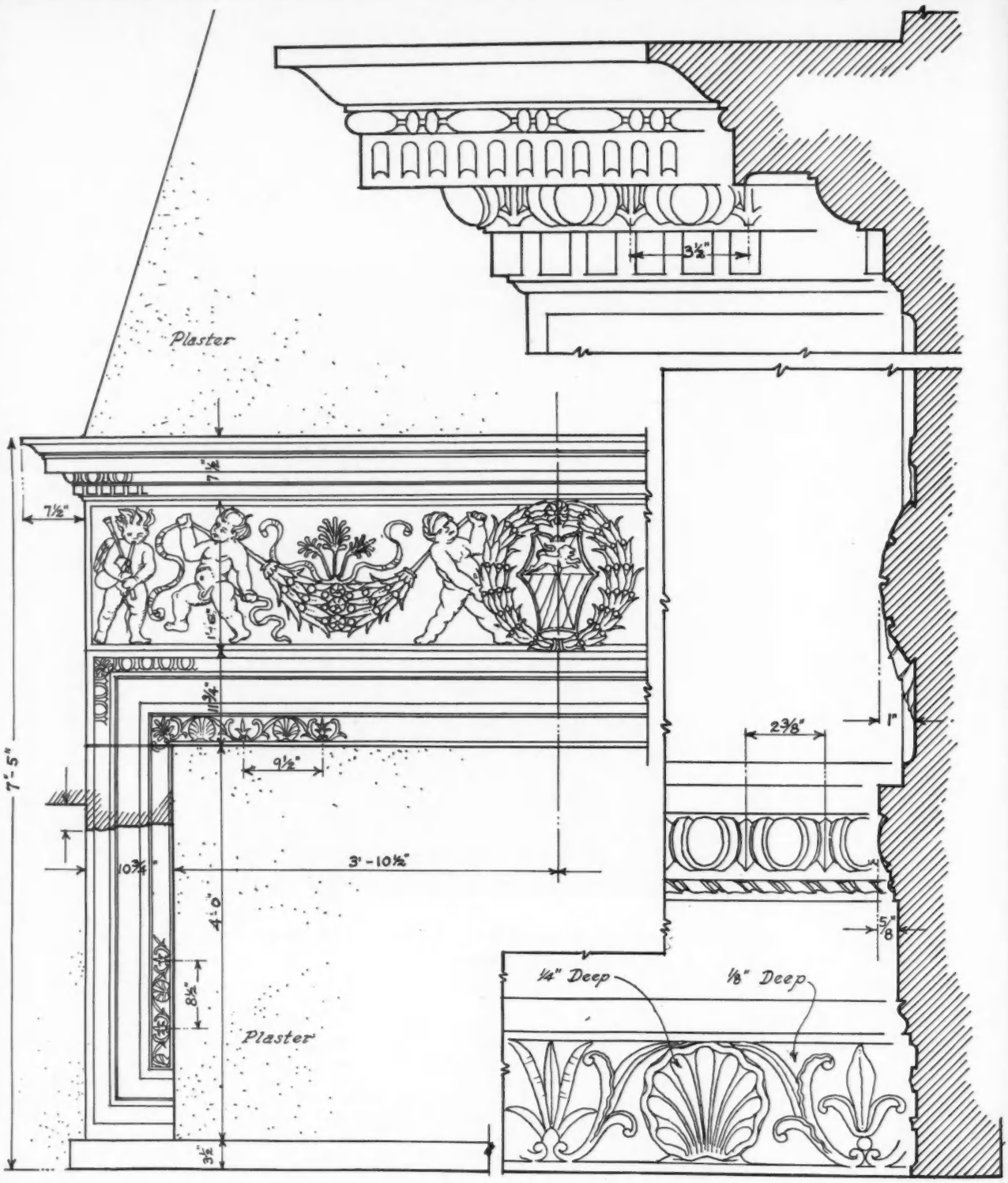
A SERIES OF MEASURED DRAWINGS

By HOWARD MOÏSE

CHIMNEYPIECE IN LARGE HALL OF MAIN APARTMENT

PALAZZO DAVANZATI, FLORENCE

PALAZZO DAVANZATI is one of the few structures still remaining from the period when Florence was at the height of her power. Built originally for the Davizzis, it remained in the hands of the Davanzati family from 1578 to 1838, falling then into decay from which it was rescued by Prof. Volpe, restored and furnished with much of its oldtime magnificence. The large hall of the main apartment still retains its old painted and cross-beamed ceiling, and the stone chimneypiece illustrated here is adorned with figures of dancing children, carved in spirited fashion, while the hooded form which the wall over the chimneypiece assumes tends to minimize the expanse of space between the cornice of the chimneypiece and the ceiling.



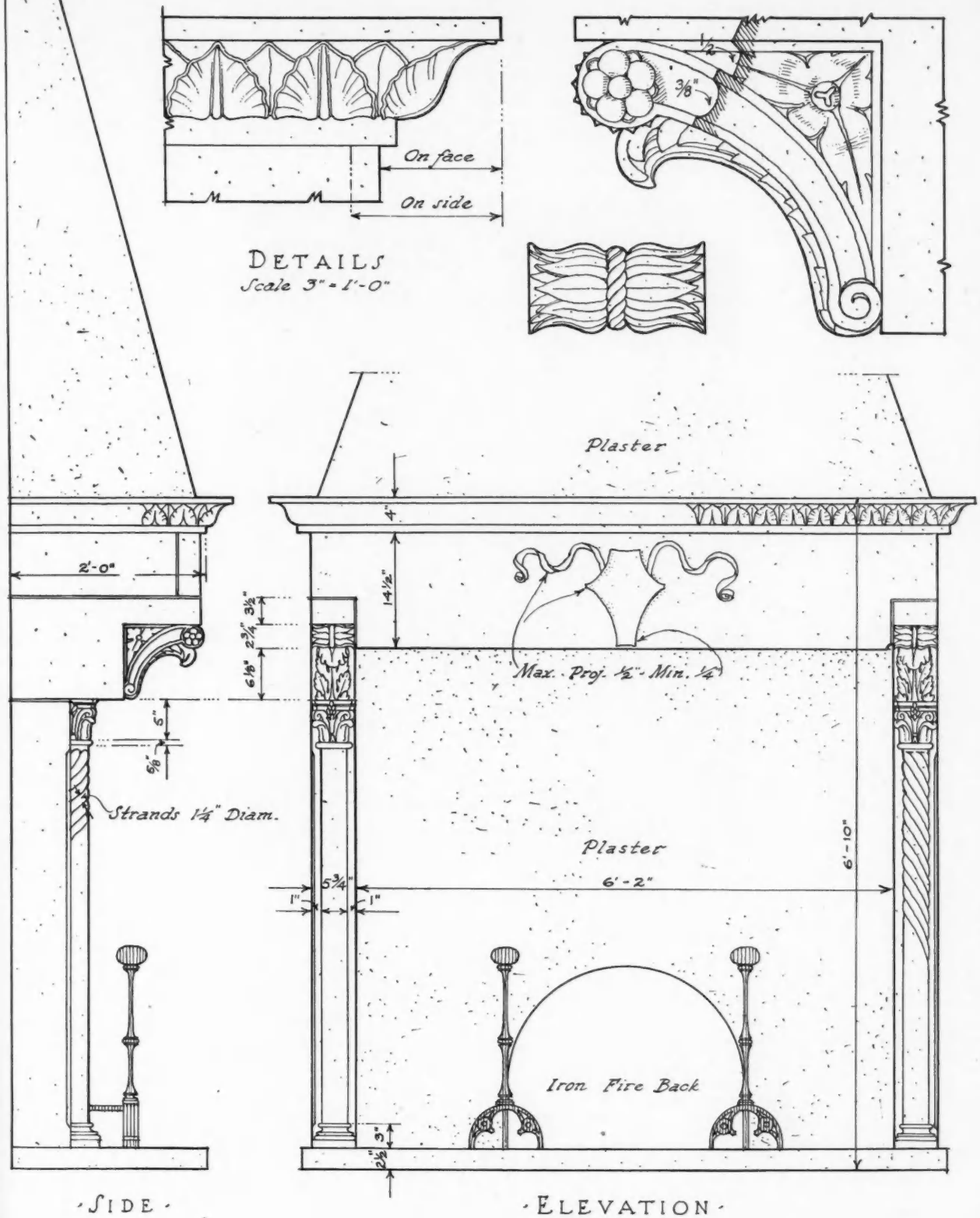
ELEVATION
Scale ¾"-1'-0"

DETAIL
Scale 3"-1'-0"

ITALIAN DETAILS 1922

FIREPLACE
PALAZZO DAVANZATI FLORENCE

MEASURED *and* DRAWN *by* HOWARD MOISE



DETAILS
Scale 3" = 1'-0"

·SIDE·

·ELEVATION·
Scale ¾" = 1'-0"

ITALIAN DETAILS 1922.

·FIREPLACE·
PALAZZO·DAVANZATI·FLORENCE

MEASURED and DRAWN by HOWARD MOÏSE

ITALIAN RENAISSANCE DETAILS

A CHIMNEYPIECE IN A MINOR APARTMENT

PALAZZO DAVANZATI, FLORENCE

DESIGNED like all the great palaces of old Italian cities to shelter various members of a large family in patriarchal fashion, this building includes many great halls and rooms of other kinds, from one of which the chimneypiece illustrated here has been drawn.

It is a particularly good example of the Italian hooded mantel supported by corbels, and lends itself readily to modern adaptation because of its good scale and general simplicity. The carving is in low relief, hardly any portion having a depth of more than one-half inch. The Davanzati Palace was designed by Michelozzi, the successor of Brunelleschi.

BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Recent Progress in Developing Co-operative Apartment Buildings

ABOUT two years ago there was presented in a series of articles in THE ARCHITECTURAL FORUM a general review of progress to that date in the development of co-operative apartment house projects. In view of the large volume of building construction which has occurred in the apartment house field since that time it is but natural that there should have been a crystallization of ideas and a broadening of experience in this field which is of considerable interest to those who contemplate carrying out such projects in the near future. In this article, therefore, we shall consider certain business features which have become more definitely established as important factors in the success of a co-operative building venture.

One important conclusion which may be drawn from the added experience of the past two years in this field is that in the development of a co-operative building project success is more certain under what is termed "the 100 per cent" plan of ownership. When this subject was last reviewed in THE FORUM past experience had left open a choice between two plans: first, the 100 per cent plan, in which the entire building is occupied by tenant-owners, and, second, the rental and ownership plan under which a proportion of the building space is reserved for renting at prevailing market rates.

While it is quite logical to assume that the rental income from such space will serve to reduce the overhead cost of occupancy on the part of tenant owners, experience has shown that the added detail of operation and management, the increased investment required, and the danger of being forced to carry unrented space during periods of depression would seem to overbalance any benefit which might directly accrue through rental profit on the space not occupied by tenant-owners. In other words, it has become almost axiomatic in the field of co-operative apartment promotion and ownership that the only successful plan is the 100 per cent ownership plan.

A number of interesting facts and opinions relative to this and other points of importance in a consideration of the co-operative plan have been drawn from comments made by Frederic Culver, President of the Joint Ownership Construction Company. This is the company which developed the building at 136 East 67th street, New York, illustrated in this number of THE FORUM. The exact business methods of this building indicate some important points:

"A corporation known as 136 East Sixty-seventh street, Inc., was formed in which title to the property was vested. The stockholders are the occupants of the building. Thus a tenant-owner has an interest in the entire property and is entitled to a 99-year lease on the apartment which he selects. The lease, with his stock, gives him virtual ownership of his apartment. Every apartment in the building is sold. No space to rent is reserved, and therefore speculating in renting apartments and carrying vacancies are eliminated, as every individual owner pays a pro-rata share of the operating expenses of the building. It is a fixed annual sum and precludes the right to make any assessment.

"Reducing apartment rents to just what it would cost a landlord to operate the building is precisely what is achieved, and all landlord's profits are eliminated. In other words, all that an owner pays is exactly what it costs to run the building. It is a logical fact that 25 people can operate one building more cheaply than they can operate 25 separate dwellings. Joint ownership affords a home to a purchaser at less than it can be maintained for in any other way.

"The building has been restricted as to the character and financial responsibility of the tenant-owners. The directors of the corporation, elected annually from among the stockholders for a year, pass on all subleases and resales. In that way the building's original standing is maintained, and although it may restrict the market as regards resale to a certain extent, it considerably enhances the value, as people are willing to pay premiums to purchase in a house having the highest class of occupants. In other words, the directors act in the same capacity as does the committee of admissions to a club. The actual management of the building is taken care of by Culver & Co., affiliated with the Joint Ownership Construction Company, Inc. In that way the operation of the building is in the hands of an experienced concern, relieving the owners of care in that respect.

"There are two aspects to the situation which would have a great influence in determining the future of co-operative enterprises for urban community buildings. One would be whether or not the majority of future developments would be along conservative or quasi-speculative lines. If the investment public should pursue the speculative line, that course would be attended with more or less danger and might retard or kill the movement. For that reason the plan of making a success of the enterprise depends on renting at the prices specified in the promotion plan. If apartments to rent on speculation were included and the prices presumed to be obtained for this space not be obtained the owners would have to make up the deficit, which would react on the investing public. To avoid that danger this company determined to sell stock covering every apartment in the building erected by it and thus by determining the maximum fixed sum its clients would be called on yearly to pay prevent their suffering any disappointment.

"It is more difficult to sell under that plan because it seems to call for a larger fixed annual rent charge than do more speculative plans. These specious proposals, involving rent speculation, lead investors to think that they will get the results that the promoter specifies (the promoter always puts his best foot forward), and are bound to please the unthinking investor more than a more conservative plan.

"It is obvious that if a building were financed on the plan of 90 per cent of the value in mortgage and 10 per cent in stock, whether it were 100 or 50 per cent joint ownership, the price to be paid for the stock would be comparatively small, and if the mortgage were 40 per cent and the equity 60 per cent of the value the cost of the stock would increase, and so would the safety factor. A mortgage of 40 per cent on a first class building

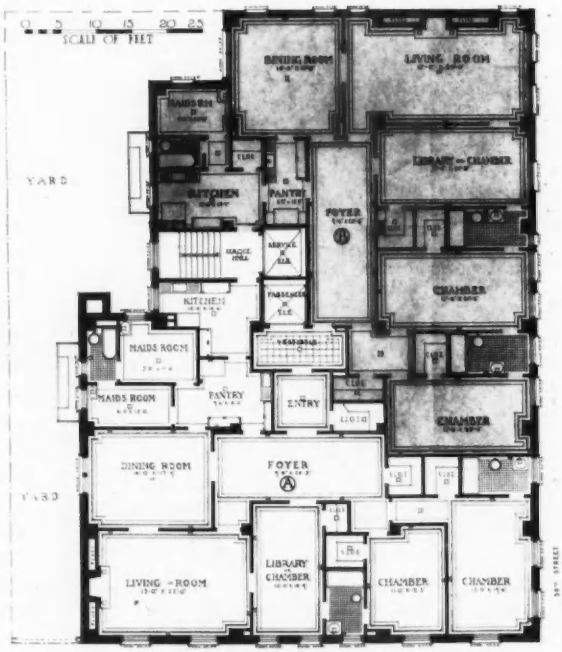
Co-operative Apartment House, 485 Park Avenue, New York
Dwight P. Robinson & Co., Engineers and Constructors

The working out of the financial aspect of a project such as this requires care, and to those who are making a study of this subject some of the cost maintenance and rental figures on this new building, 136 East 67th street, will be of interest. The total cost of the building to the tenant-owners, including land, construction costs, architects' fees, and a reasonable profit for the promoters, amounted to $630,000. A first mortgage was placed on this building for $300,000. The equity of $330,000 represented in this transaction is the amount of stock issued to tenant-owners, divided in accordance with the character and size of various apartments. In order to show how this division was made a tabulation is presented showing the price of each apartment in the building. This price represents the owner's share in the equity above his proportion of the first mortgage. In this tabulation the yearly proprietary rentals are also shown. These are determined by estimating the total operating expense for the building, in this manner:

Interest on $300,000 mortgage at 6%	$18,000
Taxes on $480,000 less $185,000, or on $295,000 at 3%	8,850
Coal	2,400
Insurance (fire and general)	700
Operating force	5,280
Supplies	500
Water, light and power	1,000
Management	1,300
Amortization of mortgage annually at 3%	9,000
Contingencies	2,470
Aggregate of annual proprietary rents	$49,500

in a first class location in New York should, under normal conditions, be easily and at all times replaceable. For the ultimate success of co-operative apartment enterprises on a very large scale two factors are essential: first, the ability of the owner of that class of stock to borrow on it from a bank or trust company, and, second, the marketableness of the stock in question.

"It seems to be a perfectly logical evolution, if we grant that in cities the apartment house is bound to displace the private residence, that the form that the organization will take will approximate in every essential something akin to private houses, so far as to transfer to title is concerned. The general form that the co-operative apartment investment has taken makes the securities given in representation of ownership, from every point of view, much more marketable than the private residence. For instance, a title insurance policy covers the title; the transfer of title means merely the endorsement of a stock certificate and the examination of the roll of occupants of the building and of its books, which are kept, under good practice by some responsible trust company, to ascertain if the revenue paid by the tenant-owners is more than sufficient to defray the cost of operating the building. In a very brief period the proposed purchaser in one of those enterprises has a trustworthy statement which will enable him to decide as to whether or not he is justified in making his investment. In those types which represent the best plan of organization an investor would find that by becoming an owner his savings in rent over what he would pay to a commercial landlord would be at least equivalent to 12 per cent a year on the amount of money invested. The test of the proposal would be that if the owner made his investment and did not occupy the apartment in connection with his purchase, he would be able to find a tenant who would pay him a rent which, after deducting the sum to be paid to the company, the stock of which he purchased, would leave him a return of 12 per cent a year on his money."



Typical Floor Plan, Co-operative Apartment House
485 Park Avenue, New York

Here is a tabulation showing individual apartment costs and proprietary rentals:

Designation	Number of rooms	Number of square feet	Price	Yearly proprietary rental
A-1	6 rms.—2 baths	1510	$11,300	$1,695
B-1	4 " —1 "	1035	7,700	1,155
C-1	4 " —1 "	970	7,300	1,095
D-1	3 " —1 "	575	4,300	645
E-1	3 " —1 "	575	4,300	645
F-1	4 " —1 "	970	7,300	1,095
G-1	4 " —1 "	1035	7,700	1,155
H-1	6 " —2 "	1510	11,300	1,695
A-2	6 rms.—2 baths	1510	12,000	1,800
B-2	4 " —1 "	1035	8,100	1,215
C-2	4 " —1 "	970	7,700	1,155
D-2	4 " —1 "	765	6,100	915
E-2	4 " —1 "	765	6,100	915
F-2	4 " —1 "	970	7,700	1,155
G-2	4 " —1 "	1035	8,100	1,215
H-2	6 " —2 "	1510	12,000	1,800
A-3	6 rms.—2 baths	1510	12,600	1,890
B-3	4 " —1 "	1035	8,600	1,290
C-3	4 " —1 "	970	8,000	1,200
D-3	4 " —1 "	765	6,400	960
E-3	4 " —1 "	765	6,400	960
F-3	4 " —1 "	970	8,000	1,200
G-3	4 " —1 "	1035	8,600	1,290
H-3	6 " —2 "	1510	12,600	1,890
A-4	6 rms.—2 baths	1510	13,200	1,980
B-4	4 " —1 "	1035	9,000	1,350
C-4	4 " —1 "	970	8,500	1,275
D-4	4 " —1 "	765	6,700	1,005
E-4	4 " —1 "	765	6,700	1,005
F-4	4 " —1 "	970	8,500	1,275
G-4	4 " —1 "	1035	9,000	1,350
H-4	6 " —2 "	1510	13,200	1,980
A-5	3 rms.—1 bath	1030	9,600	1,440
B-5	4 " —1 "	1300	12,200	1,830
C-5	6 " —2 "	1225	11,500	1,725
D-5	4 " —1 "	1300	12,100	1,815
E-5	3 " —1 "	1015	9,600	1,440

The proprietary rents in the aggregate cover all running expenses and amortization of mortgage.

The subscriptions of prospective tenant-owners in this operation were made payable upon this schedule:

		Per cent
1.	On signing	10
2.	When title is vested in owning company	15
3.	When foundations are completed, not sooner than one month after last payment	15
4.	When concrete work of floor for second story of building is in place, not sooner than one month after last payment	10
5.	When concrete work of the floor for the fourth story of the building is in place, not sooner than one month after last payment	15
6.	When roof is on the building, not sooner than one month after last payment	10
7.	When brown coat of plaster is on the building, not sooner than one month after last payment	15
8.	On completion of building	10
		100

Another interesting co-operative apartment building which has just been completed in New York is the structure at 485 Park avenue, developed under the management of Douglas Elliman & Company. Here again experience has shown the soundness of the 100 per cent plan. In this connection Mr. Elliman is authority for the statement that "co-operative apartment house ownership is tenant ownership. It does not mean that you buy an apartment simply, but that you actually invest with others in real estate. The inducement lies in the saving in rental. The only dangers are in trying to get too much out of the investment and in improper management. As an example, a man buys a co-operative apartment, say for $10,000. Assuming that he had invested that amount at 6 per cent, which would be a fair supposition, his interest would have been $600 a year on that amount. The upkeep of the apartment would be about $1,000 a year.

Kitchen

Sun Parlor

Typical Interiors in Hawthorne Court Apartments, Jackson Heights, New York
George H. Wells, Architect

Adding the $600 interest would make a total of $1,600, which he would charge to one account. The theoretical rental value of the apartment would be, according to the average of our experience, approximately $3,200 a year. Consequently he would save 30 to 50 per cent on his rental. His profit would be the difference between $1,600 and $3,200 or $1,600."

The total cost to the tenant-owners of the building at 485 Park avenue was $1,100,000. Of this amount $540,000 is in the form of a first mortgage, and the balance, or $560,000, is represented in stock.

As will be noted by reference to the floor plan presented herewith, these are large apartments, arranged two to a floor, excepting on the eleventh, twelfth and fourteenth floors which are occupied entirely by one apartment each. The typical apartment A represents an investment by the tenant-owner of $26,000. His proprietary rental is $3,120 per year for an apartment which has an approximate rental value of $6,500 per year. Apartment B represents an investment of $22,400, carries a proprietary rental of $2,688, and has a market rental value of approximately $5,600. In estimating the proprietary rental the total expenses of carrying this building are:

Estimated annual expenses:	
Labor	
2 doormen at $80	$1,920
2 passenger elevator men at $75	1,800
2 service elevator men at	1,800
1 night fireman at	1,200
1 day fireman at	900
1 porter at	960
1 superintendent at	1,800
	$10,380
Lay-off in summer	1,040
	$9,340
Fuel	$3,500
Electricity (net)	1,000
Water	500
Supplies	250
Repairs and decorations	3,500
Insurance	1,100
Administration	5,000
Gas	50
Miscellaneous	2,000
Total operating expenses	$26,240
Taxes (estimated)	$18,000
Interest on first mortgage	32,400
Estimated total expenses	$76,640

Progress at Jackson Heights

In the last two years there have been a number of interesting developments in connection with the great co-operative apartment development of The Queensboro Corporation at Jackson Heights, New York. These buildings, some of which are illustrated in connection with this article, and others designed by Andrew J. Thomas in previous issues, represent still more interesting types of architecture and construction than earlier structures in this development. In line with increased building costs the management of this corporation wisely decided that the more expensive type of apartment was in order, and no pains have been spared to develop a high standard of attractiveness and living comfort.

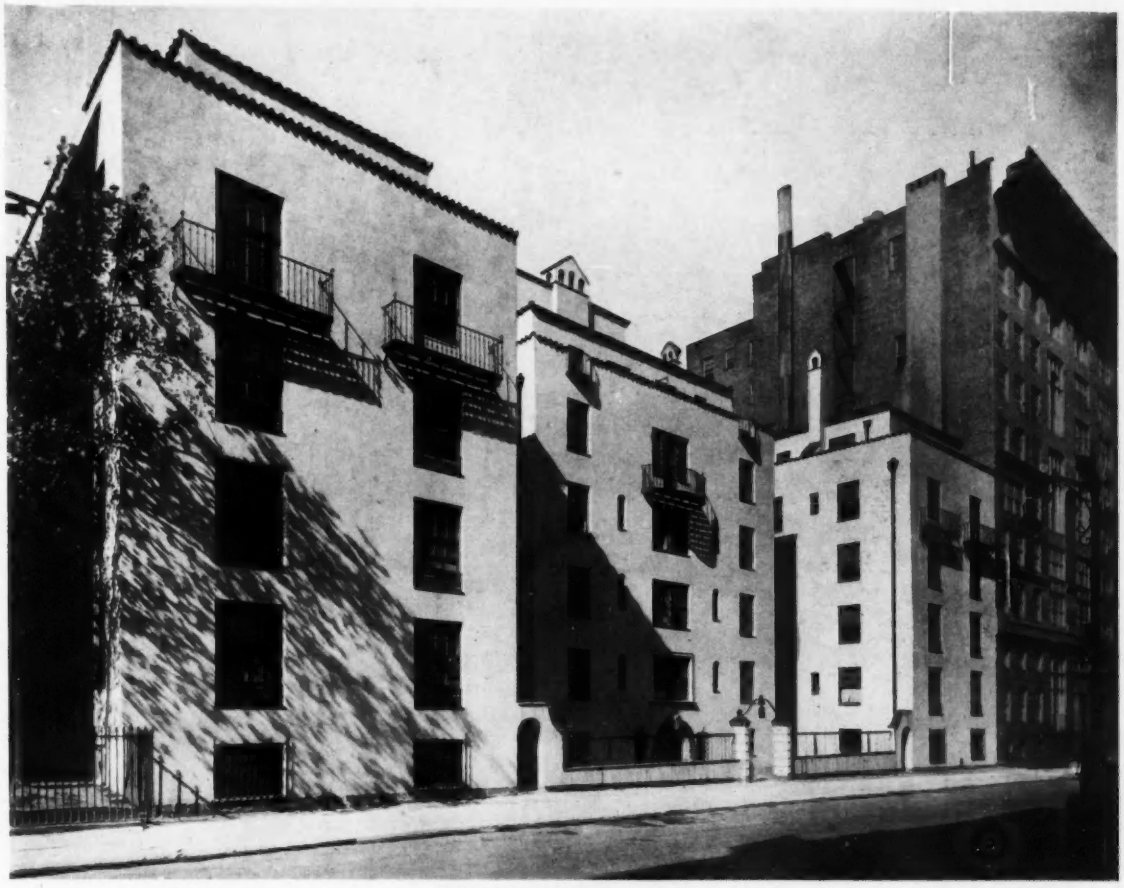
Commenting on the experience of his organization, F. R. Howe, Vice-President of The Queensboro Corporation, has made claim that when "certain fundamental conditions are observed, tenant-ownership of apartments shows a greater economy with equal comfort as compared either with the ownership of a house or with the out and out rental of an apartment. These fundamental conditions are thus briefly presented:

1. A fair price.
2. Safe financing.
3. A neighborhood of established or growing values.
4. Careful selection of tenant-owners, to insure harmonious relations.
5. Expert management.

"Reviewing these conditions as they affect Jackson Heights, first with regard to price: The policy of the building up of Jackson Heights has been to charge a fair or normal profit on a large number of buildings, rather than to attempt to make a large profit out of each particular group. The soundness of such a conservative policy has resulted in the fact that many of the tenant-owners at Jackson Heights who have been forced to move to other cities have been able to sell their interests at substantial profits, and they have all made substantial savings by becoming tenant-owners since the inauguration of the plan in the summer of 1919.

"Sound financing of apartment buildings is the same as in other investment enterprises; the relation of the mortgage indebtedness to the entire investment should not exceed one-half, or at the most 60 per cent. At Jackson Heights one-half has never been exceeded, and in some cases the mortgage has been for considerably less than one-half of the value of the enterprise. One of the greatest abuses that tenant-ownership has been subject to has been overloading the properties with two and three, and in some instances four mortgages, which places the purchaser in the same position as the 'shoestring' margin trader in Wall street—the first puff of adversity wipes him out.

"The stability of the neighborhood as a residential district is of great importance to investors in co-operative apartments, and when the neighborhood is of steadily increasing value, the investment is more certain to appreciate with the growth of the neighborhood. Such a condition is presented by the development at Jackson Heights. Starting a few years ago with three or four 5-story apartments, now more than 100 apartment buildings have been constructed or are in course of erection. The careful selection of tenant-owners is a *sine qua non* of successful tenant-ownership. Rigid examination of business and social references is an essential point where people are collective owners of apartments, and nowhere has greater care been used than at Jackson Heights, where in the selection of over 700

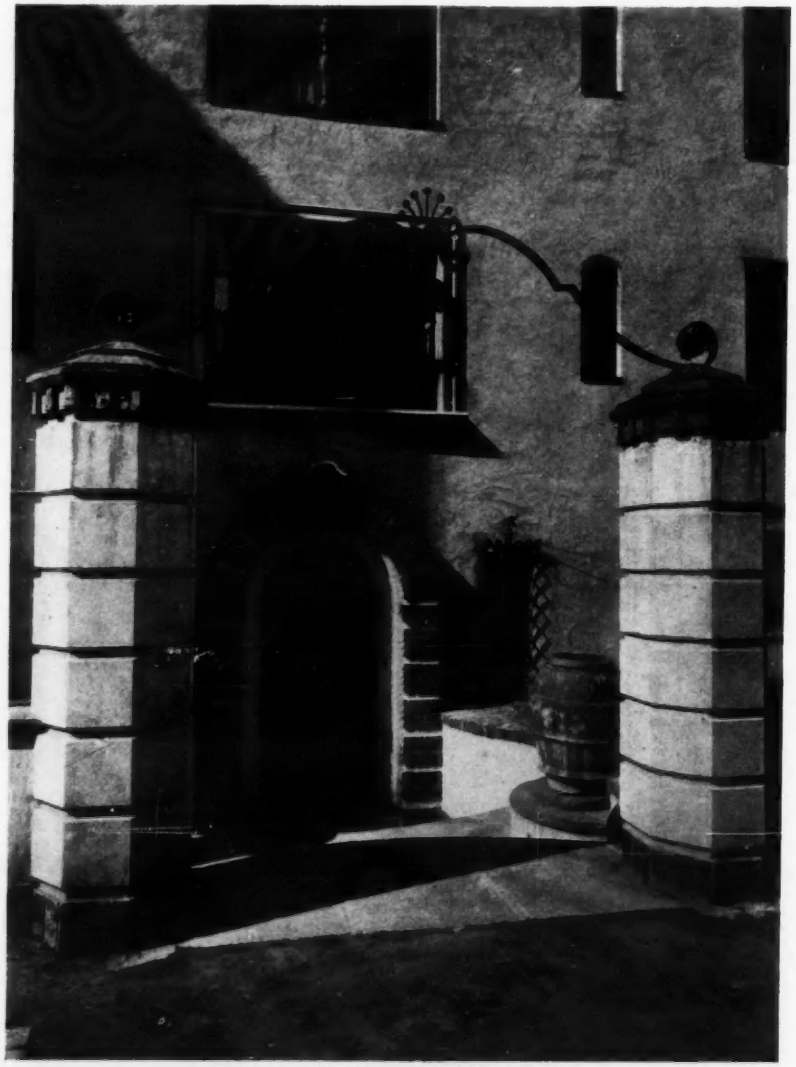


GENERAL EXTERIOR VIEW

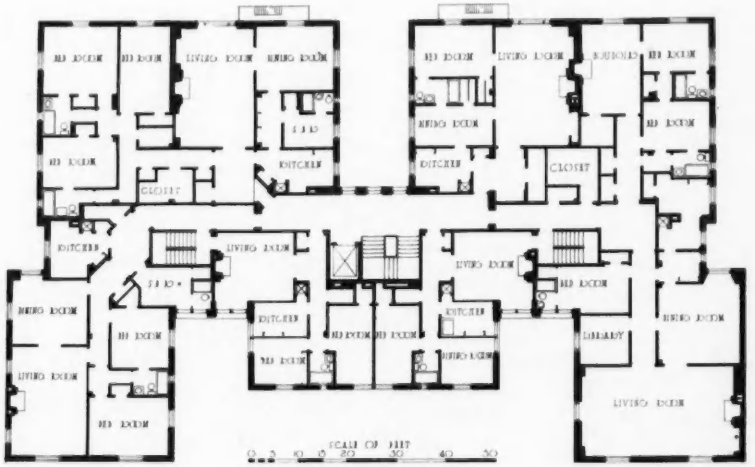
DETAIL VIEW OF UPPER STORIES

CO-OPERATIVE APARTMENT HOUSE, 136 EAST 67TH STREET, NEW YORK

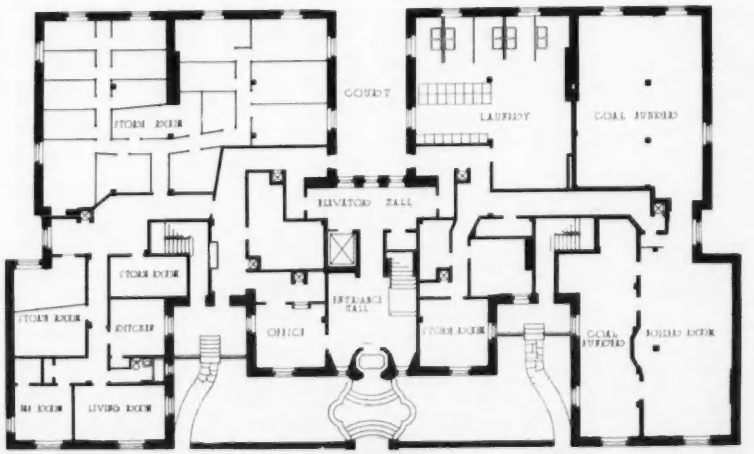
WALKER & GILLETTE, ARCHITECTS



DETAIL OF ENTRANCE



SECOND FLOOR PLAN



FIRST FLOOR PLAN

CO-OPERATIVE APARTMENT HOUSE, 136 EAST 67TH STREET, NEW YORK

WALKER & GILLETTE, ARCHITECTS

present tenant-owners not one mistake has been made in admitting an undesirable owner.

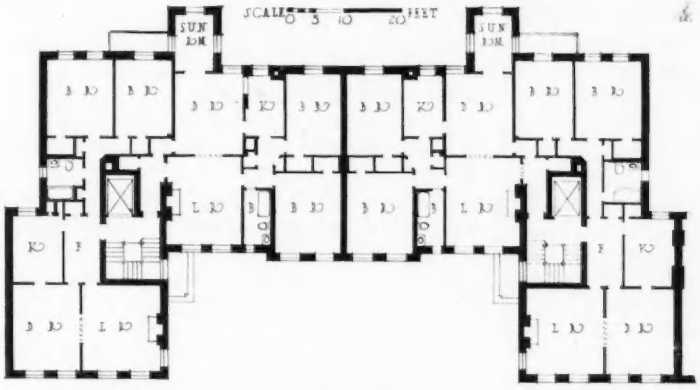
"Many co-operative apartment houses starting out with good financial plans and careful selection of owners have come to grief through amateur management. The business of apartment management is just as much a business as factory management. It should be in expert hands. Like factory management, large scale operations secure reductions in cost. At Jackson Heights The Queensboro Corporation manages the entire enterprise. Over one hundred 4- and 5-story apartment houses in one neighborhood are managed by this corporation, so that large economies are effected in the purchase of such items as coal and in the general direction of the enterprise.

"Recent figures covering the sale of stock representing a high class apartment in one of the new buildings at Jackson Heights will be of interest for comparative purposes. The apartment taken as an example is a 7-room and 3-bath apartment which is one of eleven apartments in a 5- and 6-story elevator building which is priced at $213,000 and in which the mortgage is only one-third of the cost. Here the running expenses, including elevator service, janitor service, light, heat, etc., are estimated at $3,400, and the fixed charges, including taxes in excess of exemption, interest, insurance and management amount to $7,000.

"In determining the quota to be paid by tenant-owners, there was added $2,100 amortization on the mortgage, which is at the rate of 3 per cent per annum, and $850 as a reserve to meet contingencies.

"Turning now to the individual apartment. This apartment could not be rented elsewhere in New York at the present time under from $3,000 to $4,000. The cost to buy is $13,000, which represents its share of the equity in the entire building. It may be purchased under the installment plan by paying down a minimum payment of $3,500 and paying the balance as rent. This balance includes all of the foregoing items of upkeep, fixed charges, etc., and is $103 per month. $123 is the monthly installment, including interest on the deferred balance, making a total of $226 per month or $2,700 per year."

These payments will purchase the entire equity of the apartment, valued at $13,000, in eight years. Comparing this with an apartment renting for $3,000 per annum, in eight years there would have been paid $24,000 as rent. Under the installment tenant-ownership plan, in addi-



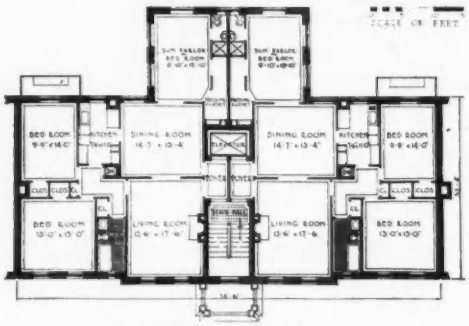
Typical Floor Plan of Laburnham Court

Co-operative Apartment House Group, Jackson Heights, New York

Exterior of Laburnham Court Apartments and Community Tennis Courts

George H. Wells, Architect

Rear View, Showing Garden Treatment in Center of Block
Jackson Heights, New York



Typical Floor Plan, Hawthorne Court

tion to the $3,500 initial payment there would have been paid to meet running expenses, interest, insurance and installments, $25,196 in eight years.

The result in one case is the ownership of nothing; in the other case, the full paid ownership of an equity of $13,000 and the reduction by 24 per cent in the share of the mortgage upon the building, which is $1,600 reduction for this one apartment; furthermore, a payment into reserve for contingencies of over $600 is effected for this one apartment, and in addition the incalculable amount of saving due to a possible reduction in the future in the cost of operating the buildings, all of which accrues to the tenant-owner, so that with every decline in the cost of operation there is increased saving.

One more fact is interesting to know in this connection. Under the original sales plan of Jackson Heights the owner's rental of an apartment was established at a high enough figure to make it possible to pay 7 per cent interest on the stock representing tenants. Within the past two years it has been deemed wise to eliminate this interest feature and to charge an owner's rental only sufficient to cover running expenses. This has been done for two reasons: first, because the 7 per cent return to the owner in the form of interest on his bonds offered taxation difficulties, and, secondly, because this action withdrew a complication in the sales plan, for the more simple a sales plan for promoting a co-operative venture can be made the more readily will success be attained.

In this series of articles the most important details of a successful co-operation project have been covered, but each operation involves individual consideration and presents specific problems, in solving which a special service is offered to readers.—The Editor.

Exterior of Hawthorne Court Apartments, Jackson Heights, New York
George H. Wells, Architect

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

The Hotel or Restaurant Kitchen

By N. W. ALDRICH

PROMPT and smoothly running service, upon which depends the success of a restaurant or a hotel dining room, is almost entirely a matter of its being served by well equipped and well arranged kitchen and other service quarters. An examination of a successful restaurant kitchen will show that it has been so planned and organized that it becomes a kind of mechanism, not readily thrown out of balance by unexpected demands upon it.

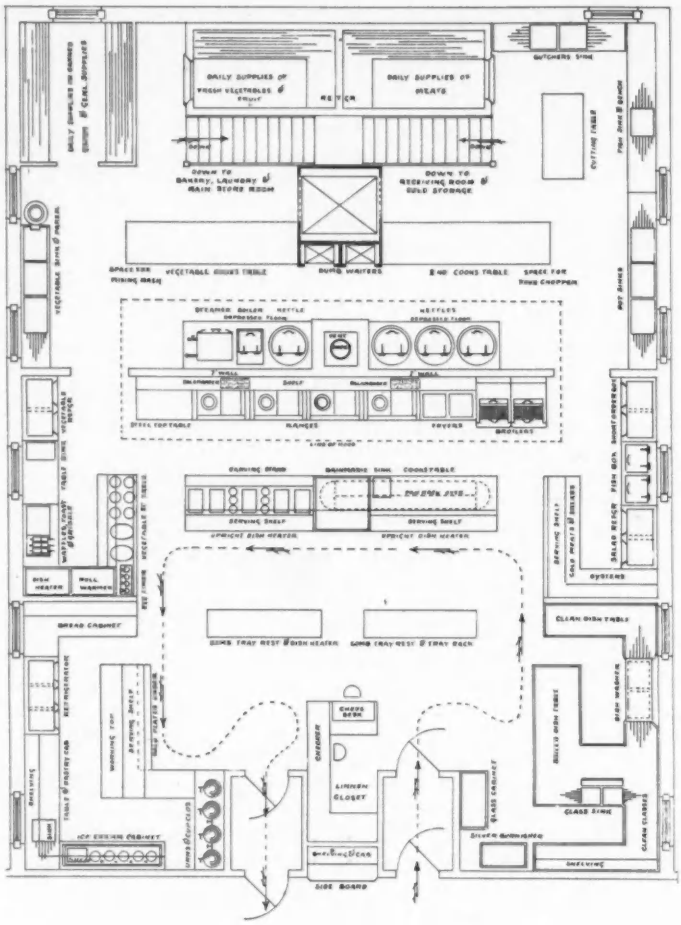
To make plain what is meant by a well planned and equipped restaurant kitchen a diagram is given which may serve to illustrate the suggested layout. While the plan will to a certain extent explain itself, it is the writer's aim to explain how important it is to bring such departments as are shown on the plan, and especially those in the serving department, as near as possible to the dining room.

It would be almost impossible to give the exact capacity of such a kitchen, owing to the fact that this depends wholly upon its supervision. Stewards as a rule are accustomed to certain ways of running their departments, and some of the most competent in their line may not be familiar with or understand plans as well as an architect or engineer who would consider it his duty to see that such plans are thoroughly understood. Relative to capacity, however, this kitchen with proper supervision should be large enough for the dining room of a medium sized hotel, say of 400 to 500 rooms, or for a restaurant with a seating capacity of from 300 to 400. With the limited amount of space available for this kitchen, say 45 x 60 feet, the receiving room, storeroom, bakery, laundry, employes' dining rooms, etc., are located on the floor below and should be properly lighted and ventilated.

Although it is not advisable to recommend every kind of apparatus that may be used in kitchens without first consulting the owners, managers or stewards, care should be taken that space be allowed for such fixtures in order that these may be installed at a later date without interference with the more essential details which are already in place. The section of the kitchen where dishes, silver and glass are washed should be so arranged that waiters or 'bus boys may deposit used dishes at soiled dish tables without interference with those working in this department. A large soiled dish table should be so arranged that glasses and silver as well as dishes may be cared for in this corner of the kitchen. Dishes should pass through a dish washing machine to the clean dish table where they are assorted and placed in heaters or on shelves, and glass should pass in an opposite direction to glass washer or glass sink and be dried ready to return to cabinet or dining room. Silver may be washed in the same machine as dishes and then passed to where it is sorted and dried, but as dish water is always greasy, glasses should be washed either in a separate machine or a double sink. They never look bright and shiny unless properly wiped. A silver burnisher will also be found practical, and since it is considered one of the essentials, like the machines for cleaning and polishing steel knives, space has been allowed for all these details on the plan. The oyster bar and bar or counters for salads and cold meats, together with a short order or cut meat box and sea food chest, are so arranged that a shortage of help would not cripple the service as it would if these departments were scattered, and waiters ordering from these departments are served over the shelf at convenient height above the working top of the salad bar. The combination feature, including cook's table, bain marie and carving stand, is so located and equipped with upright dish heater that several waiters may be served at the same time without interference, the top of the dish heater being used as a serving shelf and the two tables in the center of the floor being useful for resting trays while loading as well as for warm dishes and clean tray rack.

The section where the vegetable cook performs her duty while serving is provided with steam table, roll warmer, dish heater, table, and combination griddle, toaster and waffle iron; also with sink and refrigerator for cooked vegetables. The egg timer is so located that the waiters themselves may attend to boiling eggs at breakfast time. This vegetable steam table should be provided with dish heaters, under the table as well as overhead, and a serving shelf with space under the roll warmer arranged for storage purposes.

Next in line we have the serving pantry, equipped with bread and pastry cabinets; a refrigerator for fruits, dairy products, etc.; sink; ice cream cabinet; urns and urn stand with cup closets, and serving counters, equipped with overhead shelves; drawers and shelving on the working side, and narrow shelves for cold plates and possibly silver boxes on the service side. By carefully planning this serving pantry



there will be found shelf room enough to care for quantities of dishes, tea and coffee pots, etc., as well as food, and sufficient amounts of both should be stored for each serving period.

By locating the checker's desk in the center of the kitchen it will be possible for her to observe the service as well as performing her duty as checker.

Going to the rear of the kitchen, or at the back of the cook's table and carving stand, where ranges, broilers, kettles and steamers are installed, there is in this case a tile wall dividing the ranges and broilers where order cooking is done from the steam fixtures. It is not necessary for this wall to be more than 6 feet high, excepting of course at the vent stack located in the center. A large canopy or hood covering these fixtures should carry off the greater part of the smoke, steam and fumes, and where coal ranges are used for cooking, a steel stack enclosed in vent stack as shown on the plan would provide natural draft which in most cases is sufficient. The floor under the steam fixtures should be depressed and properly drained in order that it may be kept clean. Other floor drains are important, but should be so located that they will not interfere with service. The butcher shop, where daily supplies of meat, fish, etc., are prepared, is conveniently located and can on short notice replenish the cut meat or fish supply for the cook.

The opposite side of the room, used for preparing and cooking vegetables, is but a few steps from the station where they are served. Space for the mixing machine, food chopper and other extra equipment may easily be obtained in this room, and with elevator and dumb-waiters as well as stairways to other auxiliary departments, this kitchen should prove itself to be both practical and economical.

In many cases where space is available it is considered more practical to have the various branches partitioned or separated. In such cases there are separate rooms for washing dishes and glass and also a silver room which will of course keep one person busy all of the time, and many more part of the time, especially if out of sight of the steward or chef.

No doubt the larger kitchens may be looked upon from a different standpoint, owing to the fact that each of these units is of such size that a much larger force is required for operating. The same principle, however, applies in both cases, and in this particular case the object in view is to show a kitchen of medium capacity which can be operated at minimum cost and at the same time produce quick service.

Aside from the steward and his assistant, such a kitchen should be operated with the minimum number of attendants: chef and second cook; two broiler and fry cooks; roast cook; two butchers; two salad men; two oyster men; a vegetable cook with four assistants; four girls in the serving pantry; twelve employed in washing dishes, glass and silver; two general kitchen men, and two checkers. This is based on giving full hotel service where two shifts are required, and aside from extra work at the carving stand this number should be sufficient to care for banquets as well as for regular dining room service. This combined service unit, together with a properly organized dining room force, should be a guarantee of good service in every respect.

Providing a lunch room or cafeteria is installed, whereby this kitchen is depended upon for supplies, care should be taken in order that such a department be so connected with the kitchen that its service would in no way conflict with that of the dining room. In most cases where this department would be on a separate floor, elevators and dumb-waiters will add all necessary convenience.

Electrical Wiring Layouts for Schools

(CONCLUDED)

By NELSON C. ROSS, *Associate Member, A.I.E.E.*

IN laying out the plans for the wiring of a school building the highly important subject of supplying power for the operation of various utilities must not be overlooked. These utilities are each year becoming more complex, and provision should be made for all immediate needs as well as for such possible future requirements as can be foreseen.

Motor Circuits and Power Wiring. Motors will be required throughout the building for the operation of ventilating fans, pumps, elevators, machine tools and other equipment. These motors are as a rule supplied by the contractors furnishing this equipment, but all wiring of the motors should be included under the wiring contract.

The motor circuits should be independent in all ways of the lighting circuits, excepting where motors of fractional horsepowers are to be used; such motors, however, should be of the single-phase type and wired for operation on 110 volts. They may be permanently connected to branch circuits from the lighting panels, or as portable equipment may be operated from any socket or receptacle on the lighting circuits. With direct current, each motor circuit requires two wires; with single-phase alternating current, two wires; with three-phase alternating current three wires, and with two-phase alternating current three or four wires, depending upon transformer connections.

With direct current, the voltage of the motor circuits will be either 110 or 220 volts; with alternating current either 220-440 or 550 volts, 60-cycle current, and it is of importance that the voltage, frequency and phase of the available motor current should be known before the work is laid out. All motor circuits should be installed in separate conduits and should be fed from the service switchboard, either singly, as in the case with large motors, or in groups where several motors are fed from one power main or riser.

With few exceptions, large school buildings will have two different service connections, one for the lighting service at single-phase, 110-220 volts, three-wire system, and another for the power service at the available motor voltage, either two- or three-phase current. An exception to this rule may be where the power company has not a three-phase or power line near the building, in which case it is sometimes necessary to use single-phase current, with the power company's permission, even on motors of large capacity. As a rule, however, single-phase motors of more than 2 or 3 horsepower in individual motors must not be installed and connected to the service.

Where the motor voltage is 220 volts or less, on any system, the smaller motors may be satisfactorily operated from the power circuits; where, however, the motor voltage is 440 or 550 volts, it is not advisable to operate any portable equipment, or motors of fractional horsepowers, and such small motors should be connected with the lighting service. This also applies to motors for the operation of the machines in the lunch room and kitchen, such as the dish washer, potato peeler, meat grinder, etc., as well as any machines and equipment that may be directly used by the instructors and pupils; when this is done, the specifications should call for single-phase motors for these machines, etc., for operation on either 110 or 220 volts.

Fans for the ventilation of toilet sections may be located on the roof, in an attic space, or elsewhere as may be convenient. Where so located, and where there is sufficient room to install controlling apparatus, the motors should always be operated from the power circuit. Where such vent fans are of the "ready to run" type and are located directly in the toilet section, it is at times advisable to use single-phase motors on these fans, even of as large as 1½ horsepower, and to operate these motors from the lighting circuits, as this permits the starting and stopping of the motor by means of a flush switch of the lock type, set in the wall adjacent to the location of the fan. As these motors are in reach of the pupils, there is then no danger from the higher motor voltage that may be used on the power circuits throughout the building. This also applies to the small motors used for the ventilation of vent hoods in the chemical laboratory or for special laboratory equipment.

All motors throughout the building, and not included under the electrical contract, should be furnished and set in position ready for wiring by the proper contractor. All controlling equipment, such as speed controllers, compensators or automatic starters should be included with the motors. The wiring contract should as a rule include the mounting in position of all such controllers, etc., as well as all wiring to and between the motors and controllers to make the work complete. In the event that slate backs or bases are not included with the controllers, and such controllers are to be mounted on or supported on wood or on plastered walls, the wiring contract should include the furnishing and installation of these slate bases as required by the code. The wiring contract should also include the furnishing and installation of a fused knife switch at each motor, this switch to be of the proper capacity to protect the motor.

With a motor voltage of 220 volts, a standard slate based open type knife switch may be used at the motors. For years, however, it has been the writer's practice to require that these switches and fuses be enclosed in steel cabinets, or to make use of any of the standard externally operated safety switches, as this makes a better installation and

does away with the danger of electric shock or burns due to accidental contact with the current-carrying parts of the switches and fuses. With the use of 550 volts, however, open switches should not be considered, but some type of 550-volt safety switch should be used at all motors; this is of importance, as aside from the question of good construction, or safety in the operation of the motors and equipment, the rules of different cities will arbitrarily require the installation of safety switches on this voltage.

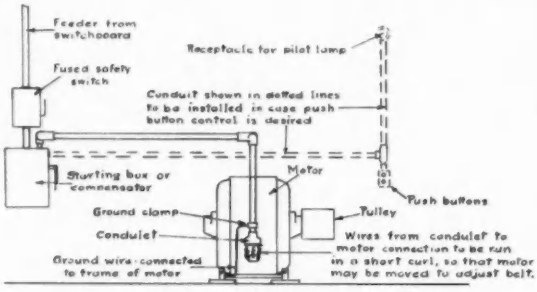

Feeder from switchboard
Receptacle for pilot lamp
Fused safety switch
Conduit shown in dotted lines to be installed in case push button control is desired
Motor
Starting box or commensator
Push buttons
Ground clamp
Pulley
Condulet
Wires from condulet to motor connection to be run in a short curl, so that motor may be moved to adjust belt.
Ground wire connected to frame of motor

DIAGRAM SHOWING CONNECTION OF SAFETY SWITCH-COMPENSATOR AND MOTOR

In general, the construction at the motor should be "under iron," that is the feeding conduit should terminate in the steel box of the motor switch, conduits passing also between the switch and starter, or compensator, and from the starter to the motor. Where the starter is not of the enclosed type, the conduit may terminate in a condulet or similar fitting, the wires passing through holes in the porcelain cap of the fitting direct to the terminals. Where the motor is of the direct connected type, the conduits may be made up with a rigid connection to the motor, but where belted motors are used, the conduit must terminate in a condulet or similar fitting as just noted, the wires passing from the fitting in a curl to the terminals on the motor, sufficient length being left on the wires to permit the motor's being moved on the belt rails or base, to allow for the tightening of the belt.

In the mounting of speed controllers on fan motors, particularly where such motors and equipment are installed in connection with air-washers, the controller should be set up on the wall and not on the floor. It is further advisable that the conduits and wires from the switchboard to the controllers and from the controllers to the motors should be run "up and over" rather than under the floor, so as to avoid trouble on the circuits due to a ruptured water pipe or to some other accident to the air-washer equipment.

As ventilating equipment may be located on the roof or in attic space, as well as in the basement, and as this apparatus must be operated each day, the question of control should have consideration. The writer is not in favor of remote-control equipment for this work, since if the engineer or janitor must go to each fan in order to put it in operation, he can see that the oil wells are filled, the belts in place and the equipment in proper condition and running at the proper speed, while if this apparatus can be started and stopped from the engine room or other convenient point in the basement, the equipment is very likely to be neglected. If, however, it is desired to control this equipment from a remote point, automatic starters may be located at the motors with controlling push-buttons at points in the basement. Pilot lamps should be installed at the buttons, one to each motor, and so connected that the lamps will glow when the motors are in operation and be canceled when the motors are stopped. No. 14 wire only is required for the controlling circuit. With automatic starting and stopping of the fan equipment, a speed controller of the "pre-set type" is located at the motor, this being set to the speed required. The motor will then run at this speed, under control of the automatic starter; when the speed is to be changed, the engineer must go to the motor and readjust the speed to the desired point.

Another method is sometimes used, consisting of a standard speed controller at the motor, with an underload circuit-breaker connected also in the circuit, a master knife switch being located in the basement at some convenient point. This forces the engineer to go to the motor to start and adjust the speed, but the equipment may be stopped at night by opening the switch in the basement.

Where an elevator is to be used, the hoisting machine may be located on the basement floor, in the attic space, or in a penthouse on the roof. The hoisting equipment, including controller, automatic operating devices, wiring in the car, both for the operation of the car and the car lighting, etc., is included under the elevator contract. The wiring contract should include a separate circuit from the service switchboard to the hoisting machine, and this should terminate in a fused switch with an extension of the circuit from the switch to the location of the controller. All final connections of the circuit with the controller will be made by the elevator contractor. A branch circuit should be carried from one of the lighting panels to a point halfway up the well shaft, terminating in an outlet box at this point in readiness for connection to the flexible lighting cable from the car.

Where equipment is provided for industrial classrooms, such as printing rooms, machine shops, woodworking shops, sheet metal departments, etc., and motor-driven machines are to be used, an accurate layout of the rooms with locations of the machines should be obtained before the wiring plans are completed, as these machines will be grouped throughout the space and the feeding conduits must be run under the floor to the controllers and motors. It is of importance that each industrial department, whether of one or more classrooms, be separately controlled from a panel or switchboard, this kept under lock by the instructor, preventing the tools'

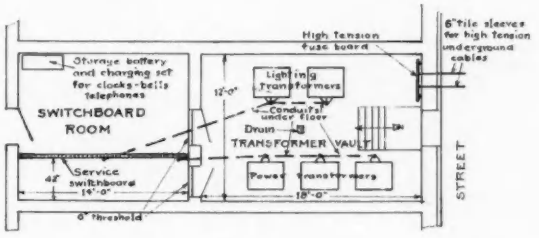
being used by the pupils during the instructor's absence. It is good practice to locate a power panelboard in a steel cabinet at some location convenient to the instructor's desk, this panel being of the standard type and containing fused switches for the control of the different circuits to the machine tools, the cabinet door being fitted with a lock. Where space is permitted but where the development of the industrial equipment is not determined, it is good practice to carry either an empty conduit or a power circuit from the service switchboard to the rooms in question and to terminate this conduit and circuit at a convenient point in the room, either at the ceiling or at a point about 4 feet from the floor, the conduit to be run concealed and terminating approximately 1 inch from the wall. The conduit should be capped and left in readiness for extension of the circuit. This provides a feeder circuit to the room, and the circuit may be extended in exposed conduits to the locations of the motors when the layout is determined. With the use of individual motors this of course means the later cutting of the floor or the installation of the conduits on the ceiling and dropping to the individual motors.

In running circuits from panelboards to the different tools the writer has found it advisable to use a single circuit for motors of 15 horsepower or larger; to use two or three motors of 10 horsepower each on a circuit; five or six motors of 3 horsepower each, and as high as ten or twelve motors of 1 horsepower each. The tools would of course be grouped on the circuits, depending on their types and locations. Thus a large planer would have a single circuit, while two or three small planers, four or five saws, four or five boring machines or drills, or ten to twelve lathes could be grouped on separate circuits from the panelboard. This method of circuiting keeps down the size of the copper and conduits in the floor slabs and provides a flexible equipment, since but few machines will be rendered inoperative by the opening of a fuse; it further permits the instructor to cut out any group of machines at will. The use of floor boxes should be avoided where possible in the installation of machine tools, and the conduit should bend up from the floor in an elbow, the conduit terminating in a fitting well above the floor. This not only provides a waterproof installation, but as the circuit wires are carried above the floor there is ample room to make proper splices and connections.

In proportioning copper for the motor circuits, the full load as well as the starting load must be provided for, and the copper must be heavy enough to take care of the maximum load in amperes. If the starting load on the motor, due to a long line of shafting, or pumps under pressure, is 25 per cent in excess of full load, the copper must be proportioned for the starting load; if, however, a number of motors are connected on one circuit, all of these motors will not start at the same instant, and the feeder copper therefore should be proportioned for the maximum load that may be expected at any one time. This is, as a rule, on general work from 60 to 80 per cent of the connected load of all the motors on the circuit. Where the circuits are long, additional copper must be provided to care for the drop in voltage due to the resistance of the circuits, etc. In school work, however, where all of the motors are located in one building and the runs are comparatively short, copper proportioned for the full load of the motors will be ample.

For direct current work, allow eight amperes per horsepower on motor circuits when operating at 110 volts, and four amperes per horsepower at 220 volts. For alternating current, three-phase circuits the table on the next page will be found of convenience.

Service Connections and Switchboard. With direct current the service cables will run directly from the street mains to the service switchboard, either underground or on poles. With alternating current service (with transformers installed on the street) the lines will be brought in as just described, there being as a rule one single-phase, three-wire service for lighting and a separate three-phase or two-phase service for power. On the larger school buildings it is generally preferred that a transformer vault be located at some point in the basement and transformers for both lighting and power installed in this vault. When this is done the primary service at 2,300 volts is carried into the vault, terminating in oil circuit-breakers, and passing from the breakers to the primary leads of the transformers. The wiring contract should provide for primary cables, usually No. 4 conductor, from the circuit-breakers to the property line, these installed in conduits or with armored cable. The cables from the property line to the primary mains of the service company are installed by the company. The transformers will be furnished and set in position by the company.



DETAIL SHOWING TRANSFORMER VAULT AND SWITCHBOARD ROOM

The transformer vault should be of fireproof construction and should have not less than 40 square feet of floor space for 100 K. V. A. transformer capacity, and it should be larger where transformers of greater capacity are to be used. The vault should have full headroom and should be vented to the outer air with not less than two 6-inch square ventilating ducts.

The service switchboard room should be adjacent to the vault, and it is good practice to arrange the board as shown on the diagram, with a door from

the vault to the rear of the board. This keeps all high tension connections in the vault or opening from the vault, and since the vault is kept locked, even the operator of the board cannot come in contact with the high tension terminals. One panel of the switchboard should be reserved for the watt-hour and demand meters of the service company; the drilling for these meters is to be done from templates furnished by the company. The switchboard should be made up in two sections, one for power and one for lighting service, each fitted with a master switch, and the two service mains running from these service switches to the transformers.

Each feeder from the switchboard to the panelboards, motors, etc., should be mastered from fused switches on the switchboard, the switch and fuses being of the full capacity of the feeder. There should be a separate feeder from the board to the stage panel and lobby panel of the assembly hall, also a separate emergency feeder to the lobby panel controlling the exit and emergency lighting.

There should also be a separate feeder to the panel controlling the lighting of the gymnasium, and separate feeders to the different groups of panels controlling the lighting circuit throughout the corridors. As a rule the corridor panels are grouped on four risers, one at each corner of the building, thus controlling four sections of the building on separate risers.

On the power circuits there should be a separate riser controlling the ventilating equipment in the basement, and also separate risers to such ventilating equipment as may be installed on the roof, to the motors in the industrial departments, the elevator, the motor generator set for the moving picture booth, and the motor-driven equipment in the boiler room.

All switches on the lighting panels of the switchboard may be of the standard open type, the same type being used for the power circuits on 220-volt work. With 550-volt work, however, it is advisable to use back connected oil circuit-breakers on the power panels of the service switchboard.

Recording and indicating instruments are not as a rule used on these switchboards; if it is desired to keep records of the loads and distribution of the current, instruments may be installed on this board and connected in the feeder circuits. These may be of the indicating, recording or chart type as desired.

Riser circuits should be run from the switchboard to the panels of the lighting circuits, and where there is more than one panel connected to the riser the riser should pass through the panels connecting in series, full sized copper being used, for if the copper is reduced from panel to panel it becomes necessary to make use of fuses to protect the smaller conductors, and the cost of the fuses and connections becomes more on these short runs than the cost of the full sized copper.

Riser circuits should be proportioned on three-wire, 220-volt circuits for 4.7 amperes per kw. connected load, three wires of the same size being used for each riser circuit.

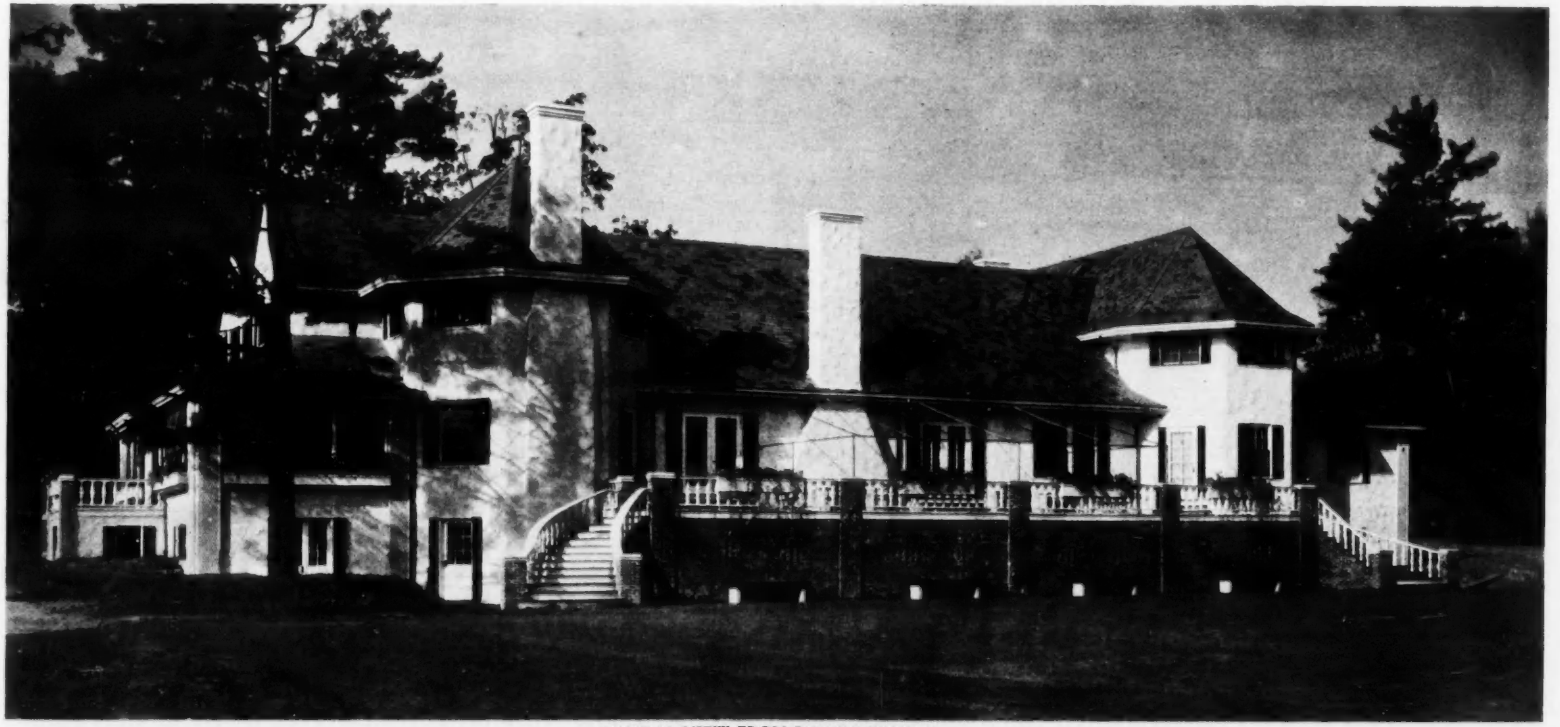
TABLE FOR PROPORTIONING COPPER IN MOTOR CIRCUITS WITH ALTERNATING CURRENTS

H.P.	Approx. full load current in amperes	Amperes of starting fuses	Amperes of running fuses	Amperes of switch	Size of wire
110-volt circuits					
1	6	15	10	30	No. 14
2	12	25	20	30	12
3	18	35	25	30	8
5	30	60	40	60	6
7½	42	80	60	100	4
10	56	100	75	100	2
15	84	150	125	200	0
20	104	200	150	200	00
30	156	250	200	200	300,000 C.M.
220-volt circuits					
1	3	10	6	30	No. 14
2	6	15	10	30	14
3	9	20	15	30	12
5	15	30	20	30	10
7½	21	40	30	60	8
10	28	60	40	60	6
15	42	80	60	100	4
20	52	100	75	100	2
30	78	150	125	200	0

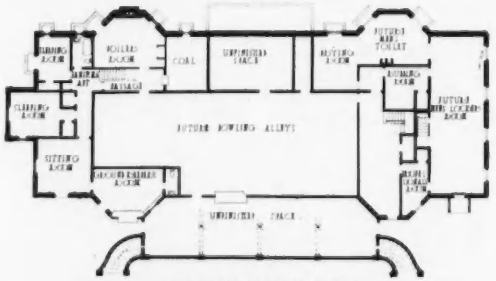
In certain districts a three-wire, 110-220-volt lighting service may not be available, in which case all feeder circuits are developed on a 110-volt, two-wire system. These feeders must be proportioned for 10 amperes per kw. connected load, and the copper should be sized for approximately 80 per cent of the total connected lighting load of the building. Two wires are used (of the same size) for all feeder circuits.

Conduits containing the feeder circuits should be run exposed on the ceiling of the basement corridors or concealed in the first floor slab, rather than under the floor, in order to avoid pockets that may contain moisture. As a rule, these conduits may be run in the duct spaces in the basement corridors, either at the sides of the heat and vent ducts, or in the galvanized iron vent ducts, passing out through the sides of the ducts at the panelboards.

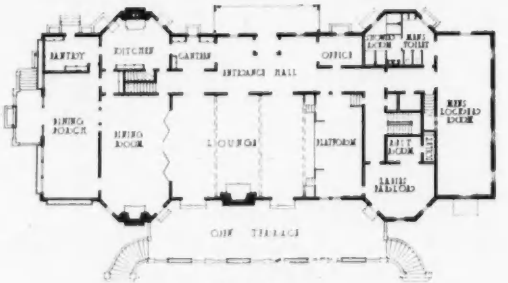
Where, due to building construction, it becomes advisable to install the feeder conduits under the floor of the basement, and where there is any liability of there being moisture, the feeder circuits should be sheathed with lead in addition to the regular rubber insulation. A steel junction or splicing box must be used at the point where the leaded wires connect with the riser circuits, this located in an accessible location in the basement corridor, unless the construction permits the leaded wires to be carried into the cabinet of the first panelboard without splices, in which case the lead may be laid back and the wires connected direct to the terminals of the buss bars of the first panelboard.



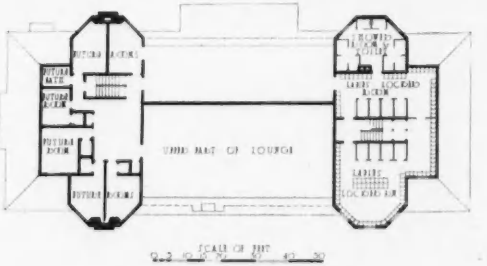
GENERAL VIEW FROM TENNIS COURTS



BASEMENT FLOOR PLAN



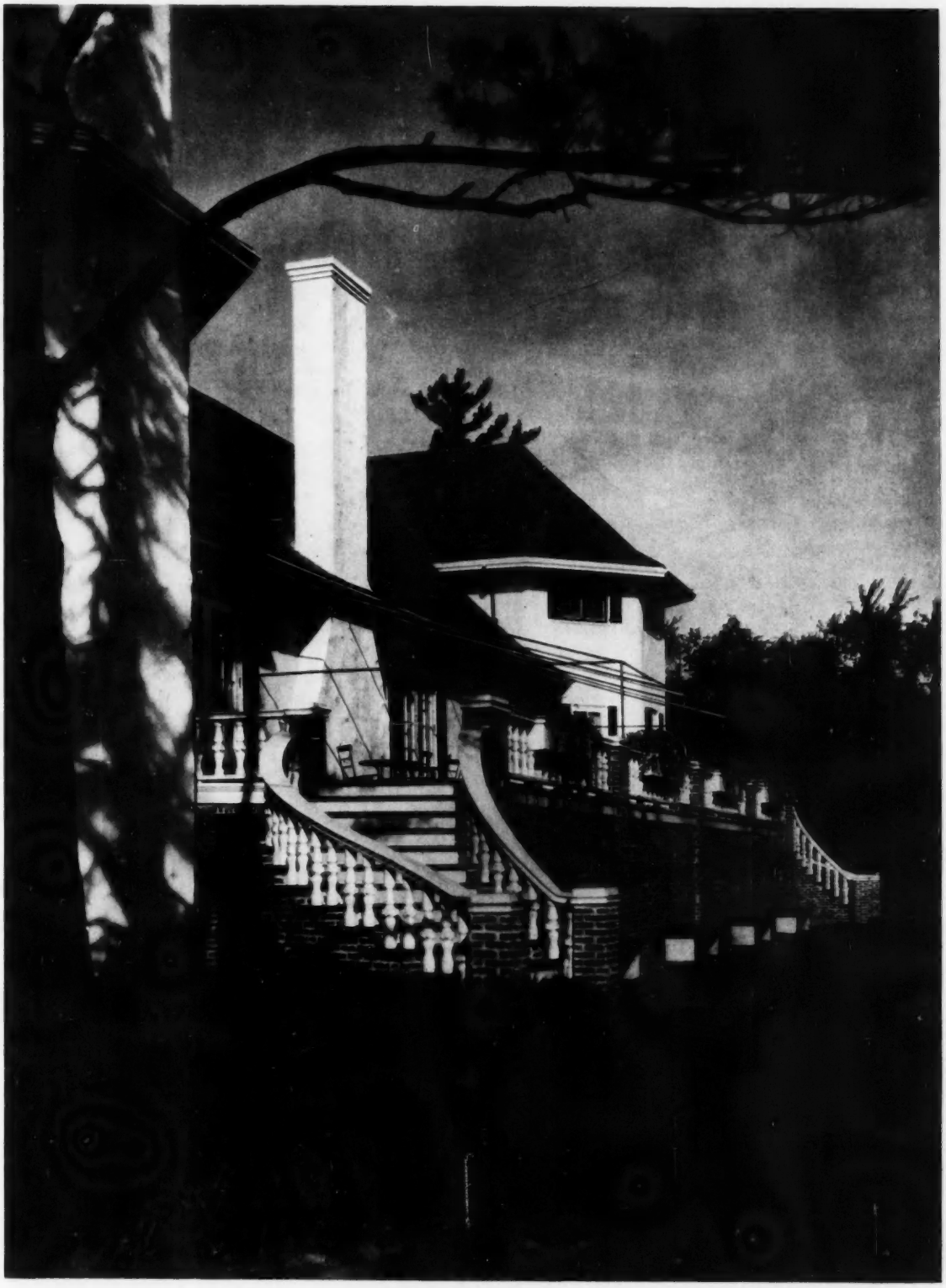
FIRST FLOOR PLAN



SECOND FLOOR PLAN

LONGWOOD CRICKET CLUB, CHESTNUT HILL, MASS.

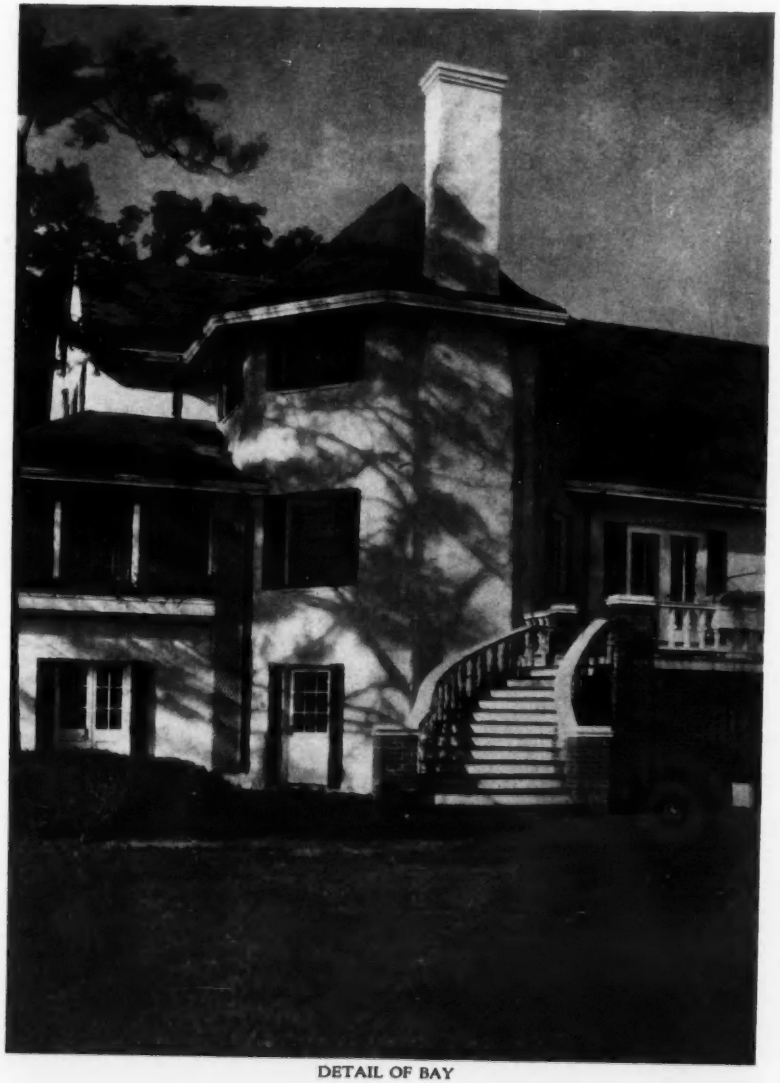
PUTNAM & COX, ARCHITECTS



DETAIL OF COURT SIDE

LONGWOOD CRICKET CLUB, CHESTNUT HILL, MASS.

PUTNAM & COX, ARCHITECTS



DETAIL OF BAY

ENTRANCE FRONT

LONGWOOD CRICKET CLUB, CHESTNUT HILL, MASS.

PUTNAM & COX, ARCHITECTS

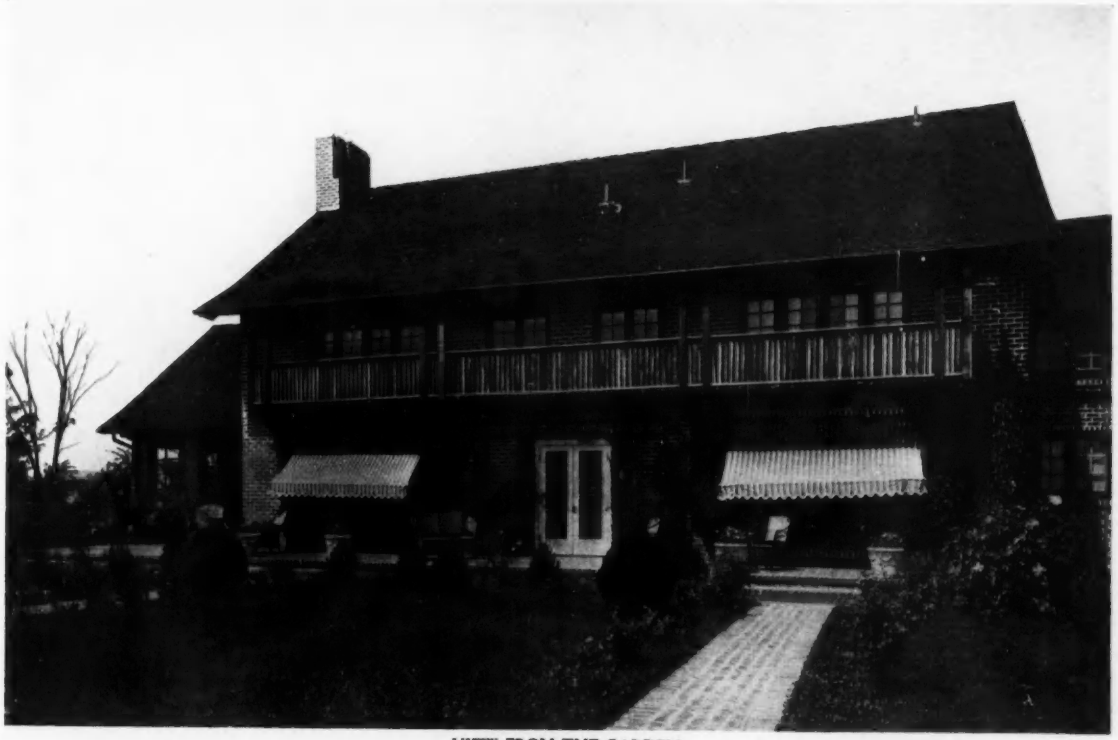
DINING AND CARD ROOM

LOUNGE ROOM

LONGWOOD CRICKET CLUB, CHESTNUT HILL, MASS.

PUTNAM & COX, ARCHITECTS

VIEW OF ENTRANCE FRONT

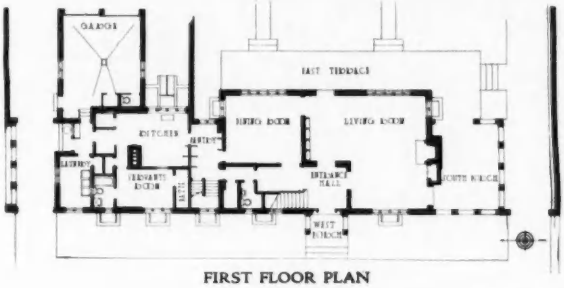


VIEW FROM THE GARDEN

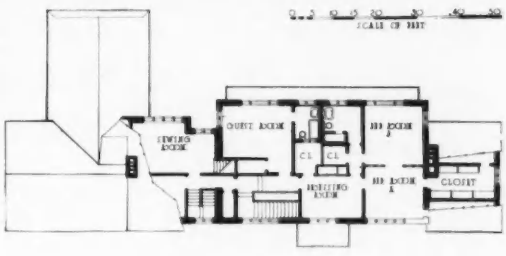
HOUSE OF ARTHUR S. PARKS, ESQ., WICHITA, KAN.

MYRON HUNT, ARCHITECT

DETAIL OF ENTRANCE



FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF ARTHUR S. PARKS, ESQ., WICHITA, KAN.

MYRON HUNT, ARCHITECT

Concrete Construction

V. CONCRETE IN THE OFFICE

By WALTER W. CLIFFORD, *of Clifford & Roeblad, Engineers*

DESIGN computations, drawings, and specifications comprise the office end of concrete construction. Like the field work, they vary somewhat in practice from other departments of building work.

System in design computations for concrete is of great importance, because practically every concrete member requires as many computations as a steel plate girder. In a concrete beam, for example, the exterior moment must ordinarily be computed at points of positive and negative moment and often at other points to locate the cambers; the shear must be computed at several points in order to space the stirrups, and the rods must be selected for suitable combinations, top and bottom, and for compression steel at the support. After the solution is reached, it cannot be expressed to the draftsman by a simple reference to a standard section, but must be shown in a sketch or the information must be tabulated. Furthermore, grades of material and allowable stresses are not standardized in concrete, and to facilitate a review of computations or later reference thereto, clear presentation of fundamental data is essential. All this work may be done with the utmost neatness, yet if it is arranged in a haphazard manner it will be a tedious process to find all the desired information, and the possibility of there being omitted data is great.

Systematic computations are most easily made by the aid of a printed form. Such a form is a real economy for all offices where design computations are made regularly, and a necessity in offices where computations are likely to be used by several men. In the small offices where one man makes design, drawings and specifications, a form is less important, but even there it is needful to have the data clearly arranged for future reference, and a simple office computation sheet with a heading which has blanks for loadings and unit stresses is worth while.

Design sheets are usually made letter size, and it assists most of us in our striving for neatness in computations to have the sheet quadrilled. In the heading at the top of the sheet, besides the firm name, there are usually blank spaces for the job's name or number, the initials of the designer and the checker, the date, the sheet number, a blank line for "Remarks," such as "Scheme A" or "Four-story design," and a space for the subject of the computation. Next in order of sequence and position comes a tabulation of the data. Space is allowed for "fc" (allowable compression in the concrete), "fs" (allowable tension in the steel), "n" (ratio of the moduli of elasticity), "v" (allowable shear), and "u" (allowable bond stress), and sometimes "R" (coefficient of resistance) and "p" (percentage of steel) if these are customarily used. For the small offices, where it is desirable to use one computation form for all classes of work, such a sheet is sufficient. It can be used for wood, steel or concrete, and the results can be shown by a sketch or notation at the bottom of the sheet.

Where sufficient work is done to warrant separate design forms for beams, columns, and miscellaneous members, more can be advantageously added to the form. On beam sheets there should be added to the data blanks spaces for the live load, various parts of the dead load, and the panel width. The center-to-center span and clear span should also be included, unless they are already accounted for in a printed design sketch. In the body of the sheet printed forms for the various routine computations, such as "M = ———— = ft. lbs." may be included at the option of the individual. Finally comes the statement of the results which may be in tabular form, in a sketch or by a combination of the two methods. Probably the most satisfactory method is to have a sketch similar to that shown in Fig. 1. The rods as used can be quickly drawn in over the dotted template lines; intersecting beams can be shown (and dimensioned on the top dimension line), and the sketch used as a load diagram. As actually used the sketch shown is made the full width of the computation paper. Even so, it is rather small to take all the stirrup dimensions, and they can be easily shown in tabular form as:

"Stirrup spacing from the face of left support ....."

"Stirrup spacing from the face of right support ....."

For columns a different type of sheet is needed, and something like that shown in part in Fig. 2 is very satisfactory. Concrete members, aside from beams and columns, vary so greatly that the simple sheet with heading and blank spaces for stresses is most satisfactory, although some offices have special forms for footing design.

To many who have not used them, design forms may seem a needless expense, but aside from the saving in time by having desired information quickly available and insuring against omissions, printing is immensely cheaper than handwork, and the money saved in printing the regularly used words and lines is large.

After computations come drawings. Concrete drawings are of two kinds,—assembly drawings and details. Owing to lack of standardization and other considerations mentioned in a previous article on design, concrete cannot be turned over to the contractor to detail as can structural steel. The assembly drawings for concrete work are largely the fram-

ing plans. They show the locations and sizes of columns and beams as well as of openings, and the identification numbers of beams and columns. It is usually practicable to use the framing plan for a slab detail sheet, supplementing it as may be necessary with sections. The bending diagram of slab rods can often be shown directly on the framing plan, thereby saving in large part the drawing of sections. Framing plans are usually drawn at a scale of ⅛ inch or ¼ inch to the foot.

Concrete details should be drawn after the custom of structural steel details rather than by architectural conventions; that is to say each member,—beam or column,—should be considered as a unit and so detailed. The method of taking various and sundry sections through the building and detailing thereon such members as may be visible or nearly visible is not a satisfactory method. Up to the present, at least, concrete details are usually made to scale rather than on template diagrams such as are used so advantageously in steel detailing.

There are some common conventions and customs which make for speed and economy in concrete detailing. The scale of ½ inch to the foot has been found the most satisfactory for concrete details and is almost universally used in the larger organizations. A convention not so universally used as it should be is the use of full heavy lines to indicate reinforcement. The more or less prevalent use of dotted lines for this purpose is probably based upon the idea that concrete reinforcement should be "invisible" since it is back of the surface. The dotted line has actually nothing to recommend it for showing main steel, although it may be effectively used to distinguish the ends of rods belonging to another member but projecting into that being detailed, as shown in Fig. 3. The full line can be drawn more quickly than the dotted line, and where rods cross the latter often leads to ambiguity. Weight of line offers plenty of opportunity for distinction. On framing plans, beams are often shown as heavy single lines, rods as full lines of medium weight, and outlines by a light full line, all being as clear and distinct as they could possibly be if dotted lines were used, and the whole drawing is clearer and more easily read. Another old convention which can be readily improved upon is the use of triangles and dots to indicate concrete in section. This is very interesting when well done, but shading on the back of the tracing with a soft pencil is fully as satisfactory and is much more quickly made. Still another convention—it might almost be called a principle—of concrete detailing is that clear diagraming of reinforcement is much more important than correct orthographic projection; for example, in the elevation of a beam at supports, rods should be separated on the drawing as may be necessary to indicate clearly the outline of each rod, even if they are actually in the same plane. The section and dimensions will locate them in the proper planes.

It is probably better to leave the rod type numbers to the contractor and there is, of course, no need for the architect's giving schedules or complete bending diagrams. The designer must, however, give identification numbers or marks to the beams and columns for his own reference. For this purpose, the co-ordinate system as described in the "Handbook of Building Construction" has many advantages over the old system of consecutive numbering. The details of information which the architect should give, and must give if he is to justify himself as the designer of his work, are the sizes and locations of all main reinforcement, together with the angles and locations of all cambers and bends, and the size, shape and location or spacing of all secondary reinforcement such as stirrups, hoops or spacers. In general, the designer should give such information that the detail bending diagrams and schedules can be made only one way, and then check them to see that they are made in that one way. Certain of the information about auxiliary reinforcing, such as spacer rods in slabs and beams, stirrups where uniformly spaced, column hoops, amount of cover over main reinforcement, number of reinforcing chairs or supports and the lap of column rods, can be covered by suitable notes on the drawings or in the specifications.

The specification is the final item of concrete work in the office. To this chapter of the specification, as well as to the rest, should be applied the three Cs—clearness, completeness, and conciseness. Concrete specifications of the architect are to a considerable degree amenable to standardization. By this it is not meant that concrete chapters can be printed and inserted bodily in the individual specification with merely a glance at the heading, as can be done with the specifications of certain patented articles, nor is it possible to make much headway with a specification for all kinds of concrete work for all parts of the country. But a standard specification can be written for a certain class of building work in a given locality which will, by suitable deletions and such minor descriptive items as pertain specifically to the individual job, answer for the greater part of the work of any one office, and also be a helpful guide in the exceptional cases. Such a specification should contain many sidenotes suggestive of conditions under which certain omissions or additions should be made and should suggest necessary cross references to "Allowances" and other chapters. This standard can be used in two ways: first, by having a single copy and using it as a guide for dictating and, second, by having the standard mimeographed and marking one sheet up as needed for stenographic copy.

Here is a satisfactory outline of such a chapter for ordinary building work:

A. Extent of Work and Estimates
   1. Extent of work.
   2. Division of estimate.
   3. Alternate estimates.
   4. Unit prices.

ROE & DOE
ARCHITECTS & ENGINEERS
BOSTON, MASS.

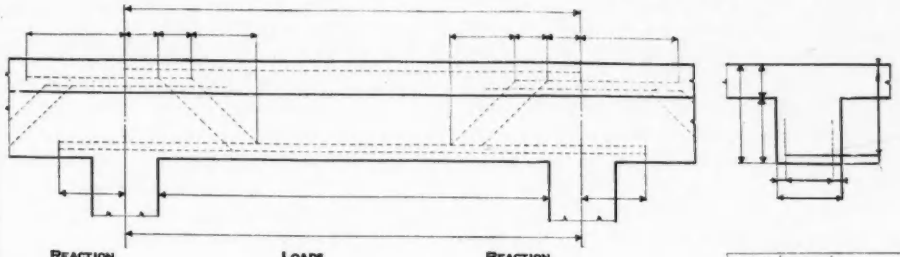
BEAM AND SLAB
COMPUTATION SHEET

JOB No.
SHEET No.

COMPUTED BY DATE CHECKED BY DATE
REMARKS

COMPUTATION FOR

ALLOWABLE fc= fs= n= v= u=



REACTION LOADS REACTION

	LOAD Per Sq. Ft.	WIDTH of Panel	
LIVE LOAD			=
SLAB			=
FINISH & PLAS.			=
WT. OF BEAM			=
			=
TOTAL LOAD PER FT.			=

Fig. 1

ROE & DOE
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BOSTON, MASS.

COLUMN
COMPUTATION SHEET Job

Computed by Checked by Date Sheet No.
Remarks:

FLOORS STORY HEIGHT			LOADS	DESIGN		LOADS	DESIGN
	TYP. COL.						
	SIM. COL.						
	TOTAL						
	L. LOAD						
	ROOF						
	BEAMS						
	WALLS						
	COL.						
	TOTAL						
	L. LOAD						
	FLOOR						
	BEAMS						
	WALLS						
	COL.						
	TOTAL						
	L. LOAD						
	FLOOR						

Fig. 2

B. Materials
1. Cement.
2. Sand.
3. Coarse aggregate.
4. Cinders.
5. Water.
6. Reinforcement.
7. Waterproofing materials.
8. Hydrated lime.

C. Workmanship
1. Forms.
2. Bending and placing reinforcement.
3. Proportioning concrete.
4. Mixing concrete.
5. Placing concrete.
6. Construction joints.
7. Cold weather protection.

D. Details of Construction
1. Granolithic floor finish.
2. Cinder concrete.
3. Roof crickets.
4. Holes for pipes, etc.
5. Rubble concrete.
6. Surface treatment.
7. Special details.

In division "A" the section on extent of work is of course different for each case. Sometimes, when the work is largely concrete, the general description at the beginning of the specification covers this point sufficiently. Sections 2, 3 and 4 of this division are governed by the customs of the individual office in letting work as well as by the conditions of the specific instance. They can be arranged in any case so that it will be necessary only to fill in a few words under each item if they are needed.

In division "B,"—"Materials,"—"Cement," "Lime" and "Reinforcement" can be covered as regards quality by reference to the standard specifications of the American Society for Testing Materials. It must be noted under reinforcement, however, that there are several possible alternatives. All should be covered in the standard, and those not needed deleted from the individual specification. The quality of sand, coarse aggregates, cinders and water can be covered by standard paragraphs for any given section of the country. The sizes of the coarse aggregates can be left to "Proportioning Concrete" in division C. Occasionally special paragraphs will be needed on aggregates required for ornamental surface treatment. In the standard specification this can be taken care of by suitable sidenotes. Waterproofing materials can be covered by standard paragraphs for the great majority of cases, since the accepted types of waterproofing materials are few in number.

Under division C,—"Workmanship,"—"Forms," "Bending and Placing Reinforcement," "Mixing Concrete," "Placing Concrete," and "Construction Joints" can all be covered by standard paragraphs and adapted to the individual piece of work by suitable deletions. The section on proportioning concrete can be similarly handled by the use of a table of mixtures from which such are used and referred to as needed in the individual case. The section on "Cold Weather Protection" will be used or omitted as a whole. For the benefit of the entire building industry it is to be hoped that there will be increasing need for its use. The Portland Cement Association publishes a pamphlet which gives excellent material for this section.

In division D, brief standard sections will cover "Cinder Concrete," "Roof Crickets," "Holes for Pipes, etc.," and "Rubble Concrete." "Granolithic Finish" has several possibilities from which to choose, and this is the case to an even greater extent in the matter of "Surface Treatment." The writing of these sections will be greatly facilitated by reference to the "Proceedings of the American Concrete Institute" for the last year or two. The section "Special Details" is the catchall for minor special features which will occasionally crop up. With complete drawings it is not often needed.

But the arts and sciences are moving forward, and the best of standards must be frequently revised. The "Tentative Specifications for Concrete and Reinforced Concrete of the Joint Committee of Engineering Societies," issued about a year ago, suggests many changes in practice which may occur in the next few years. While it is not at present in such shape as to be of very definite help, it should be read by every writer of specifications.

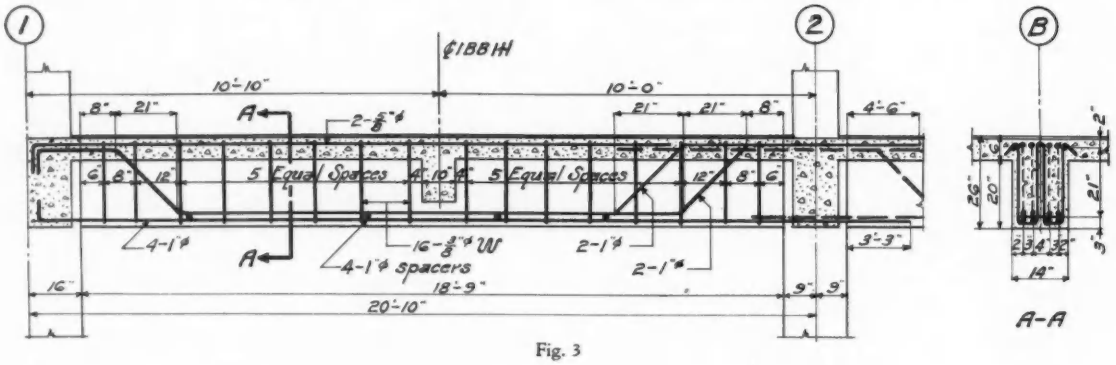


Fig. 3

Plate Description

HOUSE OF MRS. WILLIAM HAYWARD, 1051 FIFTH AVENUE, NEW YORK. Plates 73–80. Situated at the corner of Fifth avenue and 86th street and facing Central Park this residence is one of the most important individual dwellings erected in New York during recent years. Designed by Guy Lowell in the style of the Italian renaissance, the house is built entirely of pink Tennessee marble, while a balustrade of bronze is placed above the cornice.

The plan of the interior provides rooms of unusual size and height. From the vestibule one enters the lower hall from which the dining room opens at the right, while at the left and facing Fifth avenue are two reception rooms, and just ahead is the stair hall of elliptical form in which the balanced stairway leads to the main floor. Upon this floor the entire avenue side of the house is taken up by the drawing room which is connected by a long gallery facing 86th street with the library, while still beyond is a billiard room. The ceilings of the first floor are 15 feet and those of the second or main floor 18 feet, 6 inches in height.

The interior of the house fulfills the promise made by its rich and dignified exterior. Several of the rooms are fitted with antique paneling and other woodwork taken from old buildings in France and England, and the furnishings of the house are largely antiques, with many treasures of paintings, tapestries and oriental porcelain.

CO-OPERATIVE APARTMENT HOUSE, 136 EAST 67TH STREET, NEW YORK. Plates 81, 82. This structure is the latest of several co-operative apartment buildings in the neighborhood centering at 67th street and Lexington avenue, but it has not the height which often characterizes New York apartment houses, being but approximately one-half that of the adjoining structure shown in one of the plates. Owing to the ample area of the plot it has been possible to give all the apartments excellent light and air, for as viewed from the street the building is arranged somewhat in courtyard fashion, while at the rear which is toward the south the structure is planned with a deep court.

Walker & Gillette, the architects of the building, have planned the exterior in the Spanish style with stuccoed walls and with tiles used upon the roofs, the parapet and even upon certain of the chimneys, while balconies of wrought iron of simple patterns are placed at certain of the windows to give accent and variety to the stuccoed facade. The building gains an added Spanish character by the recessing of the upper story some distance from the roof cornice and the covering of this story with a low pitched tile roof of its own.

LONGWOOD CRICKET CLUB, CHESTNUT HILL, MASS. Plates 83–86. Judicious alterations and additions have transformed an old and obsolete building into this well planned and attractive clubhouse. The operations involved the moving of the original structure to a new site, the addition of a new wing, considerable altering of the interior and correction of many architectural shortcomings in the way of faulty lines and excess ornament.

The present building, of which Putnam & Cox are the architects, is planned with two fronts, the entrance front near which are arranged the offices and rooms for the reception of guests, and another front which overlooks the tennis courts. The arrangement of the main floor makes excellent provision for the uses of a club of somewhat broad scope and provides a lounging room of generous size and two full stories in height. At one end is a stage or platform, useful for many purposes, while at either side of a great fireplace French windows open upon a broad terrace which is placed at a considerable elevation above the grounds. At the end opposite the stage doors lead from the lounge into the club's dining room, while still beyond is an out of door dining room, both these departments being served from one kitchen and pantry.

The exterior presents an appearance wholly different from that of the original building. After the various changes were made, the shingled walls of the old structure as well as the walls of the newer portions were covered with metal lath upon which cream colored stucco of a slightly rough cast was applied. The chimneys were also stuccoed, the roofs covered with slate of varied colors, and the blinds painted dark green. The terrace upon which the lounge opens is supported by a brick wall, and about the terrace is a wood balustrade painted white to match the rest of the exterior trim.

HOUSE OF ARTHUR S. PARKS, ESQ., WICHITA, KAN. Plates 87, 88. In the exterior lines of this residence there is much to suggest the types associated with the early Spanish buildings in the west and southwest; the broad horizontal roof lines, emphasized by the overhanging veranda or balcony across the front, recall distinctly similar planning in old buildings in southern California, while the Spanish feeling is strengthened by the grouping of all the necessary structures under what is practically one roof, and the wooden gateway leading to the service quarters and garage. The materials used, however, are brick for the exterior walls and shingles for the roofs, materials which do not lend themselves to carrying out the Spanish type suggested by the design of the building, though presenting a pleasing appearance, particularly since the house stands surrounded by grounds which are well planned and are being well developed.

The architect, Myron Hunt, has provided a plan adapted to the spirit of the exterior—large rooms arranged in somewhat informal fashion, the large living room opening at one side upon a covered porch and at another side upon a broad terrace.

EDITORIAL COMMENT

ARCHITECTURAL EDUCATION AND THE PROFESSION

THE progress of architectural education in the United States, though extending over a comparatively brief period of time, has in general kept pace with the demands of the profession. As in the case of many other American activities we have chosen features from European precedents, adapting them to fit our special needs and conditions. Thus we were first influenced by the thorough training in the so-called practical subjects that resulted from the English system of pupilage; this produced the first architectural courses as a part of engineering study in our large technical schools. Later we were influenced by the work of the Ecole des Beaux-Arts in Paris, and with the accession of French masters and the return of many American students trained in the methods of the Ecole the pendulum swung to the opposite extreme, and a worship of the "style" sponsored by modern French architects drew attention away from construction and focused it on axes of plan and elaborate conception of elevation, which translated into brick and stone many of the Grand Prix projects that presented such beautiful studies on paper.

These two extremes afforded opportunity for study of educational methods, and we now enjoy the benefits of a system that is a compromise between them and quite typically American. That the ideal in architectural education has not been reached is, however, evident from the detailed discussion the topic always provokes at conventions of the American Institute of Architects. The problem is made complicated by the fact that architecture is both a science and an art, each phase demanding distinctly different teaching methods; the teaching of science consists of putting before the pupil facts which he is to store and later use as facts; in art, the facts are placed before the pupil, but for him to digest and reproduce in his own form. The problem is to secure a proper balance between the two, and the schools complain that the profession is not a unit in voicing its opinion as to the respective importance of these divergent requirements. The present system of education has done remarkably well under this handicap, but recent tendencies would indicate that instead of bringing the æsthetic and constructive sides of architecture together, they are being developed separately.

We have seen the manifestation of this possibility in practice within the past few years. The danger is that architecture will cease to have a definite function. We cannot deny that the engineer can construct without an architect, that the builder can build, and that the decorator can decorate without an architect. The architect's province and logical function are to direct the efforts of these various specialists, and through the medium of his general solution of a building problem produce a structure that meets definite requirements. He must have a broad understanding of the architect's real function; he must have a knowledge of modern methods and materials that will organically connect him with modern building. Disproportionate emphasis on pure design and too close study of building methods and instincts of the past will develop only academic knowledge. These problems are first met in actual practice; it is, therefore, from this experience that the requirements for successful training must be relayed to the schools. This means co-operation between the profession and the schools, and this element is too often lacking.

A definite example of one way to accomplish this co-operation is shown by the architects of Boston. Boston has always been favored in architectural education by the presence of the two schools of architecture at the Massachusetts Institute of Technology and at Harvard University. An enterprising atelier has also been conducted at the Boston Architectural Club, for the younger men working in the offices, and the atelier and the schools in past years have frequently collaborated on design problems to mutual advantage.

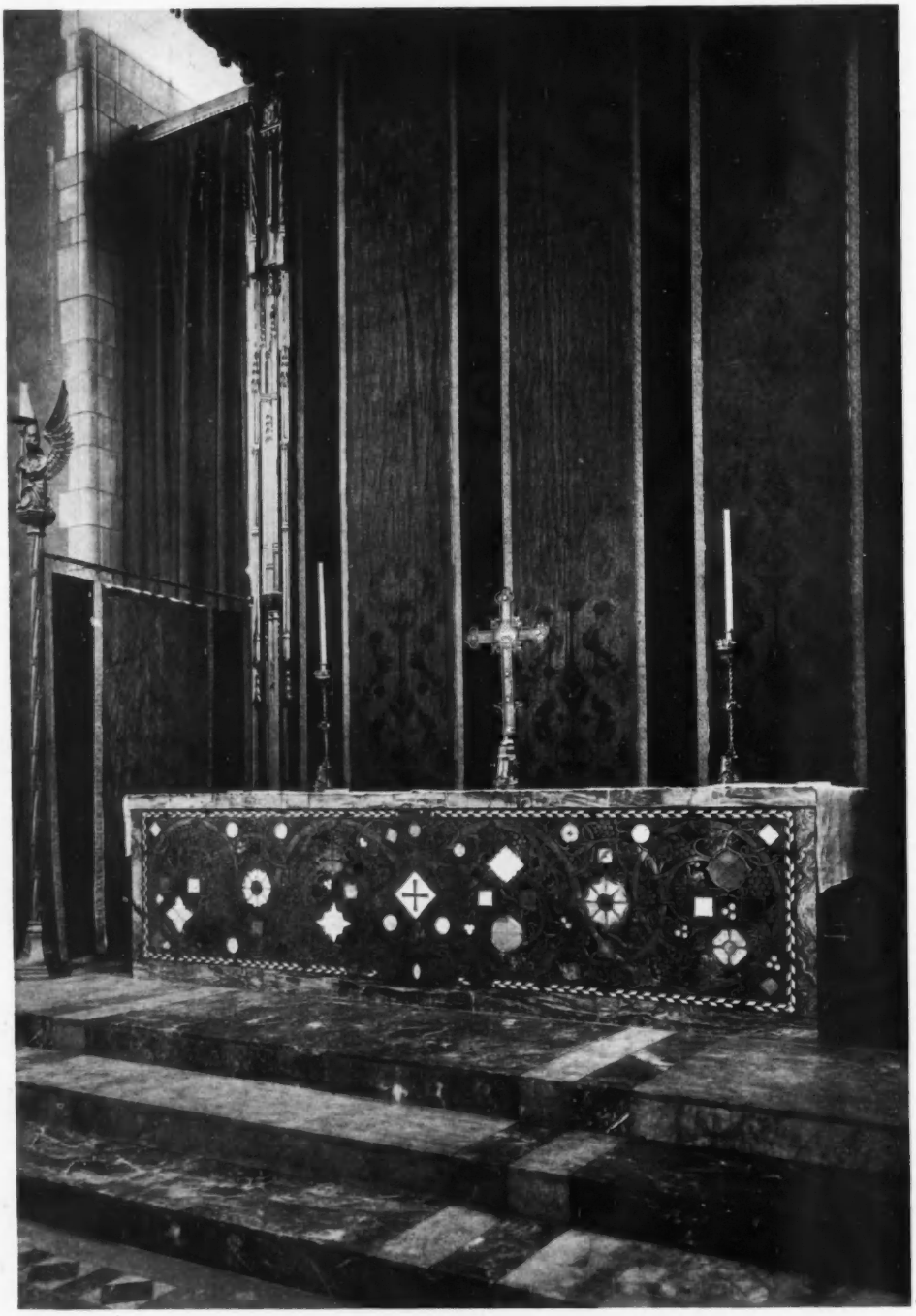
These facilities have served well for the younger student, but there has been no opportunity of giving the students the benefit of association with older men, nor has there been enough opportunity for the man past student age to profit from teaching as it is worked out in the great French schools.

The Committee of Education of the Boston Society of Architects has now arranged with the two professional schools for a revision of schedules that will permit students to continue their relations with their parent schools for the years immediately following their graduation. To encourage this movement back to the schools, the Boston Society of Architects has announced, as part of its annual competition, a prize of $150 "to go to the best project presented by a regular or special student at Harvard, Technology, or the Boston Architectural Club, or to any former student (not necessarily a graduate) who has been out of school for not more than five years. All projects must be done at one of the three schools."

Many of the Boston offices have agreed to permit their draftsmen to participate from time to time in this work, and the results are expected not only to strengthen the men who take up the opportunity, but to strengthen the schools as well.

DECORATION *and* FURNITURE

A DEPARTMENT
DEVOTED TO THE VARIED
PROFESSIONAL & DESIGN INTERESTS
WITH SPECIAL REFERENCE TO
AVAILABLE MATERIALS



AN ALTAR TREATMENT WITH AMERICAN FABRICS
EXHIBITING MASTERLY SCALE
BERTRAM GROSVENOR GOODHUE, ARCHITECT

A Plea for the Architect's Interest in Textile Fabrics

III. FABRICS AVAILABLE IN SHOPS TODAY

By HORACE MORAN, *Interior Decorator*

THE patrician of early Greek and Eastern civilization and his counterpart down to the nineteenth century were the only secular patrons of the textile arts in the past. The religious organizations were the other important factor in their encouragement. It was this and the possession of only the hand loom which have resulted in the production of all the great forms of woven material which have yielded to us such a wealth of decorative fabric documents, the source of inspiration for these days of quantity production. Since the introduction of the power loom the producers have been well occupied in applying this inheritance to modern needs, both by reproducing the costly weaves and adapting their designs to the more common materials.

The simplicity of democracy, perhaps somewhat of a pose in matters æsthetic, has given rise to a great variety of simple textiles, not affecting the costly weaves, but made to look the modest rôle they play and adapted to the modest homes they would grace. It is worthy of note that the Greeks of the classic period boasted just such simplicity in their fabrics, particularly for garments, which were purged of the florid and resplendent design of their Eastern neighbors. This reverting to the simple with us is a natural reaction following a period of debauchery in design, during which the gorgeous and pretentious ruled, regardless of real æsthetic merit. We are now treading more cautiously the field of design, and with the encouragement of the architect and the cultured client we may forget our upholstered past and use the art of the weaver to cheer interiors and not to smother them.

In this train of thought, one is tempted to consider the trend of interior design in general, so closely are the decorative fabrics related to the subject. Just one thought in this direction. The home decorated with elements so simple that the interior effect is grasped at a glance is devoid of interest, is created without imagination, and shows the influence of the thousand and one magazine articles on "how to decorate the home"; it looks like the show-

A Splendid Use of Tapestry on Furniture, the Decorative Value of Which Is Enhanced by the Marble Walls

Charles A. Platt, Architect

room of a dealer in house furnishings, and satisfies the mind of the dweller therein only because his æsthetic sense became atrophied in youth.

The many irrational and conflicting "schools" of art of recent years have led the confiding public into such confused emotions that it is a joy to see the reaction setting in in favor of a substantial, rational art, strong in a creative sense and with the rich background of tradition. This is manifesting itself in the fabric world and meets with the approval of all sane designers. There is a marked drift toward fullness of color and design, making interiors it is a pleasure to enter, and which always increase in interest like an often-heard symphony.

A Generous Use of Printed Linen for Curtains Rich in Colors and Almost as Effective as Tapestry. Horace Moran, Decorator

But to return to our subject. We are also passing beyond the era of shop tradition, when we were the victims of the upholsterer and curtain maker—a time when the drawing room window was draped with elaborate creations of plush with great and fearful fringes and tassels. This over-garment partly exposed two layers of gorgeous lace, and such an arrangement was considered quite correct and loudly proclaimed the financial standing of its owner. The chair of that period was upholstered, plump and bulbous, and boasted fringes like the mane of an Assyrian lion; he was indeed fleshy who could sink the springs to any degree of comfort. The walls, not hung, but covered with silk drawn taut over a padded lining, completed the picture. This in England, the mid-Victorian, was with us the "Grant" period. Today the designer instructs the mechanic how to arrange the curtains, selects not only the fabrics, but the fringes, the linings, and hardware, and finds all this as important for his composition as the details he gives to the cabinet maker.

A Window Treatment Showing the Value of Scale in the Curtains
John Russell Pope, Architect

There is a much-used piece of furniture of today for which there is no precedent in the past. This is the "all-upholstered" chair or sofa. Designers have for the past 30 or 40 years tried to add to this details of exposed wood frame in an effort to give it the character of some particular period of design. The shops are full of such creations, and they are sure to be found in the homes of those who know nothing of design and do not seek professional advice. This all-upholstered piece of furniture is not to be condemned, for it is useful and need not be made to assert itself in an interior. The solution of the problem is the omission of all elaborations of outline in the upholstery, the suppressing of all exposed woodwork, and adding to what is a piece of furniture of great comfort a covering material not aggressive. The writer recalls the salon of a duquesa at Madrid filled with gems of the

A Playful Use of Fabrics in a Room with Plain Walls
Cross & Cross, Architects

early Spanish crafts, one of the most interesting interiors in Europe, but with just such upholstered furniture for the comfort of her guests.

There are some things we overlook in the mad rush to execute work, but those who would employ textile fabrics effectively should never forget, first, that a wall hung with a fabric is usually more impressive than a wall upholstered; second, that a window should be hung with real curtains, not cluttered with meaningless drapery; third, that doorways between rooms are seldom improved by adding curtains, and fourth, that a chair seat looks and is more comfortable if concave and not convex, and that a loose cushion, the earliest form of upholstery, is always decorative and inviting.

To conclude, it would seem to be appropriate to give the reader a list of all the available fabrics to be had in shops of the dealers. This, however, would be beyond the range of a magazine article, and the list here given is made up of a few items from stocks that can be found at any important dealer's show rooms, showing how extensive is this field. The names designating the fabrics in each instance create as distinct an image in the mind of designers accustomed to using fabrics as would a list of the members of a classic entablature to the architect. For curtains or upholstery there are such materials as Atsbury Velvet, Antique Mohair, Belgravia Velvet, Bradford Reps, Cordova Velvets, Jaspe Cloths, Radnor Cloths, Satin Directoire, and so on. Of materials that may only be used for curtains, there are Burma Cloths, Ming Toy Silks, Tanjore Gauze, Watteau Reps, and Sunfast Super-Kopocks.

The professional world can hardly be expected to appreciate the development of textile manufacture in this country. We are now producing every kind of decorative fabric, and can boast excellent velvets, damasks and tapestries, as well as the many varieties of less costly materials. One of our difficulties in the past was the making of enduring dyes of subtle colors, but the demand for this essential quality in fabrics is meeting with a willing response on the part of the producers. We must encourage the American mills with our patronage, and freely admire and boldly condemn where merit and failure warrant it.

The illustrations of interiors accompanying this article reveal an effort not to burden the composition with an excess of fabrics, but rather a natural placing of such materials where they will be of use and gracefully lend their decorative value to the interior.

A Room with All the Fabrics Plain, the Walls Giving Sufficient Play of Detail
John Russell Pope, Architect

A Rational Window Treatment with Curtain Poles in Pockets
CROSS & CROSS, ARCHITECTS

This Room of Marble Would Have Been Less Impressive with Other Than a Simple Treatment at the Windows
CHARLES A. PLATT, ARCHITECT

Some Furniture by Duncan Phyfe

EXHIBITION AT METROPOLITAN MUSEUM

INTEREST in early American furniture, already greatly encouraged and strengthened by study of the permanent collections of the Metropolitan Museum of Art, is being further stimulated by an exhibition, from October 16 to December 15, of a group of more than 100 examples of furniture from the workshop of Duncan Phyfe, the New York cabinet maker. The pieces exhibited have been loaned by different friends of the museum from their private collections, and although they show a broad range of design they have been limited to what are considered the best years of Phyfe's period, before 1825.

Armchair by Duncan Phyfe
Showing Sheraton Influence

Unlike all the other earlier makers of American furniture, Phyfe stands out clearly, and enough remains of his authenticated work to make possible the assigning to him of a definite place among American craftsmen. A Scotchman by birth, Phyfe came to this country about 1783 and settled in New York soon after 1790. Even the most casual study of his work will show that Phyfe worked in the style prevalent in England during the latter part of the eighteenth century. At first his design was almost purely Hepplewhite or Sheraton, but early in the nineteenth century the influence of France, which was powerful in New York at that day, brought him into contact with certain elements of directoire, consulate and early empire origin. These French influences he absorbed, and combined French forms gracefully with the English types in which he had theretofore worked.

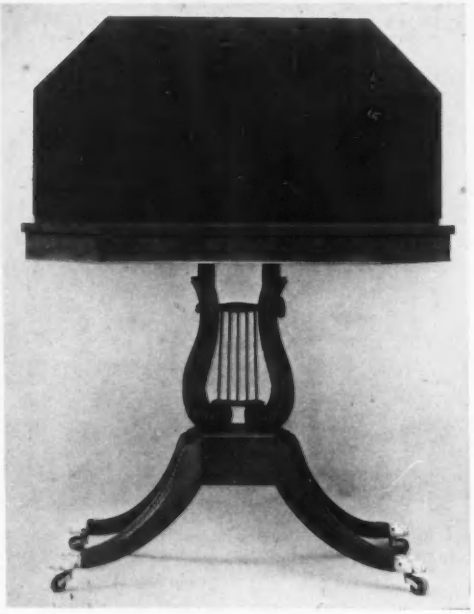
The pieces assembled at the Metropolitan fall readily into certain well defined groups. Phyfe's furniture consisted largely of chairs, sofas, and particularly of tables. He is not known as a designer of what is sometimes called "case furniture," such as sideboards, chests of drawers and other pieces made up chiefly of drawers, but a few pieces such as dressing tables, sewing tables and sideboards are in existence. Among the side chairs which are shown in this loan exhibition many are designed in a manner which plainly shows Sheraton influence, having horseshoe seats, reeded diagonal or curved cross-bars in the backs, and reeded seat-rails and legs. Another type, slightly different, retains the back and seat of the type just described, but the front legs are reversed curves, their outer surfaces adorned with acanthus leaves. The most typical of Phyfe chairs, the type with which his name is perhaps chiefly associated, exhibit full and unmistakable directoire influence with a lyre back and with legs carved in either dog foot or acanthus pattern, and still another type employs legs similarly ornamented but includes a slat in the back, made up of an oval medallion set between carved scrolls. Chairs of these varieties are found with arms, although they are rare.

As has already been suggested, Duncan Phyfe's

Dressing Table by Duncan Phyfe

Small Table with Reeded Legs

fame rests very largely upon the designs of his tables, and they may be divided into three groups according to structure: tables supported upon legs at the corners; those supported at the ends upon coupled colonnettes or else upon lyres, and those resting upon pedestals. The type first mentioned stands upon reeded legs which are straight or, as in one rare and possibly unique example, upon legs made up of reverse curves, carved with the dog foot or acanthus, these supports being quite similar to those which he often used for his chairs. Of the type which employs a pedestal there are three well defined varieties. One is that designed with a small platform which is supported upon four gracefully curved legs which are often reeded, generally terminating in a metal end or sometimes in a carved foot; this platform in turn supports crossed lyres which form a kind of pedestal upon which rests the table top. Another type, quite similar, retains the platform and curving legs, but instead of crossed lyres has four colonnettes which support the table top. The third type, used for large as well as for small tables, has the top supported upon a pedestal which often assumes the shape of an urn, from which legs carved in various spirited designs—three or more frequently four — curve outward.



Small Table with Lyre Pedestal
From Workshop of Duncan Phyfe

The French influence which lent so much of charm to Phyfe's work during what has been described as his golden period led finally to the marring of the beauty and delicacy which marked the purity of his style, for the American following of French taste extended even to acceptance of the styles of the empire when its solid, heavy forms came into vogue. Perhaps, like Chippendale and many another furniture maker before and since, Phyfe was forced against his better judgment to cater to the prevailing taste, and to design furniture in what he knew to be a debased style. His following of empire fashions was much simplified, it is true, and his ornament was handled in a somewhat restrained manner with only moderate use of decoration of gilt bronze. His furniture of this period appears to strive in a pathetic way to adhere to what might be called the letter of the empire style, while doing violence to its spirit by lightening and refining its heaviness and vulgarity—an effort, perhaps, upon the part of the student and follower of good taste to steer a middle course through the perils of a dangerous period. The effort may have proved to be too great, or possibly he was unable to check the tendency toward even more vicious design, for with the coming of black walnut and all that the name implies, Phyfe entered with the public of his day upon the downward path of bad taste, from which there was no return. Phyfe is known, happily, by only what he produced during his best period.

Typical Phyfe Work Table and Side Chairs Showing Slats with Medallions and Scrolls

A Little Writing Room at the Hampton Shops

ONE of the most delightful phases of the decoration of Louis XV days is shown in this little personal library, photographed at the Hampton Exhibits. The paneling of carved French oak and the draperies of interesting old Chinoiserie patterned French brocade are unusual, while each piece of furniture is an example of exquisite carving or marqueterie which has been chosen and arranged with that consideration of balance and scale as well as convenience of use which characterizes each Hampton interior.

Hampton Shops
18 East 50th Street
Facing St. Patrick's Cathedral
New York

Decoration · Antiquities · Furniture

The Hampton Exhibits occupy this entire building. No branches or associated companies.

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WOOD & MARBLE MANTELS

Replica of a fine Georgian mantel, with handsomely chased burnished steel register grate

FIREPLACE EQUIPMENT

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"It is astonishing how faithful is the reproduction . . . . I confess these colour-prints give me much of the poignant thrill of the originals.

"It seems to me that these prints should be used in every school-room. A half-dozen would do incalculable good in bringing a sense of beauty into the lives of children, and so help them to achieve a better standard of comparative values.

"Of course all this applies equally well to the home . . . since these Medici Prints became available."

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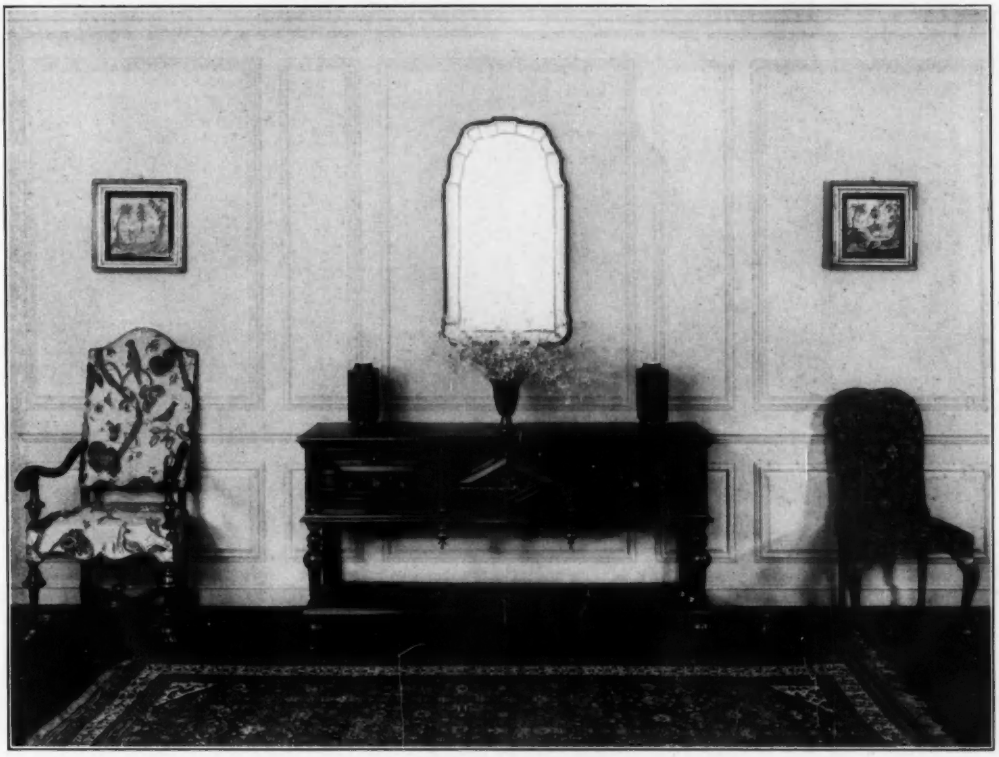
Illustrated. Published monthly. Per copy, $1.00; by the year, $9.00. Sample, 75 cents

The Medici Society of America

Book and Art Publishers

745 Boylston Street, Boston

KENSINGTON FURNITURE



A Wall in the Showrooms

English walnut furniture, by Kensington
Circa 1680–1715

STRANGELY enough there was little of the classic in the Dutch influence which dominated furniture design during the fifty years, from 1668 to 1718, when under the leadership of Sir Christopher Wren the Palladian tradition was firmly established in England. Yet a common appreciation of good proportions and the value of simplicity in the treatment of flat surfaces brought the furniture into harmony with its architectural background.

Due to this variety in design motive there is a freedom from stiffness in these dignified interiors that makes the style especially appropriate for important rooms in which a homelike, livable quality is desirable.

Kensington reproductions include numerous examples of this interesting furniture, authentic in every detail of design and retaining through the old-time hand processes of the Kensington craftsmen the character and the decorative quality of old work.

Architects interested in completing the interiors they design with furnishings harmonious in both character and quality are cordially invited to avail themselves of the service of the Kensington Showrooms and staff

Illustrated booklet F sent on request

SHOPS
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Armstrong's Linoleum

for Every Floor in the House

Look for the CIRCLE "A" trademark on the burlap back

The floor of this handsome new store in Portland, Ore., is a three-inch black and gray tile pattern (No. 201) in Armstrong's Straight Line Inlaid Linoleum.

STAIGER SHOE STORE
Portland, Oregon

1500 sq. ft. Armstrong's Straight Line Inlaid Linoleum, No. 201 laid. Specified by Strong & McNaughton. Installed by Cork Floor Products Co.

FREE MODEL EXPLAINS LAYING

A small model, as illustrated here, will be sent to any architect who is interested in better linoleum floors, laid by cementing over a lining of deadening felt. Ask on your letterhead for the model and the layer's book of instructions, "Detailed Directions for Laying and Caring for Linoleum."

Complete specifications for installing linoleum by cementing over felt are given in the sixteenth edition of Sweet's Architectural Catalog, pages 441–445.

Linoleum, the Floor for Up-to-Date Stores

DO you still think of Linoleum as an old-fashioned floor covering? Or are you acquainted with modern linoleum, handsome in design and installed as a permanent floor.

Here is a splendid example of the present-day use of linoleum—in a high-grade shoe store. This linoleum floor was laid by the contractor when the room was outfitted, as much a part of the store as the mahogany shelving or the lighting fixtures.

A well-chosen, good-looking patterned linoleum not only makes for greater cleanliness and sanitation, but is a positive sales asset as well. People like to trade where all the appointments are in good taste.

There are designs in Armstrong's Linoleum appropriate for any type of business floor—store, shop, restaurant, office. "Business Floors," a forty-eight page book showing designs in color and giving complete directions for installing and taking care of linoleum floors, will be mailed to any architect, free, upon request. Ask for a copy on your letterhead.

Armstrong Cork Co., *Linoleum Division,* Lancaster, Pa.

A6

F. SCHUMACHER & CO.

INDO-CHINESE SCENES

An achievement in tapestry reproduction

In this room in Lady Sackville's London house, hangs one of the original Soho tapestries which Schumacher has reproduced so successfully. This particular one is the original of the reproduction illustrated above.

The original Soho tapestry of which the one illustrated here is a reproduction is one of a group of eight panels probably executed in the early eighteenth century by the famous Flemish artist, John Vanderbank.

Two of the originals were lost track of many years ago. The remaining were formerly owned by Elihu Yale in England, founder of Yale College. Today they form important historical groups in Lady Sackville's London house and in the South Kensington Museum.

Six of these Soho tapestries have been reproduced in France for F. Schumacher & Co. Hand made, in a very fine point, these reproductions skillfully preserve the unique charm and unusual color variations in the backgrounds which so distinguish the originals. The Schumacher reproductions of four of these tapestries are landscape size, 6' x 9', and the other two are uprights, 9' x 7'3".

In addition to these tapestries, Schumacher has reproduced many other beautiful designs of the same period including Louis XIV "Apollo and the Muses" panels and a set of Georgian panels, as well as other tapestries in various sizes. These may be seen in their New York office.

F. Schumacher & Co., Importers, Manufacturers, Distributors, to the trade only, of Decorative Drapery & Upholstery Fabrics, 60 West 40th Street, New York City. Offices in Boston, Chicago and Philadelphia.

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SERVICE SECTION
of THE ARCHITECTURAL FORUM

Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

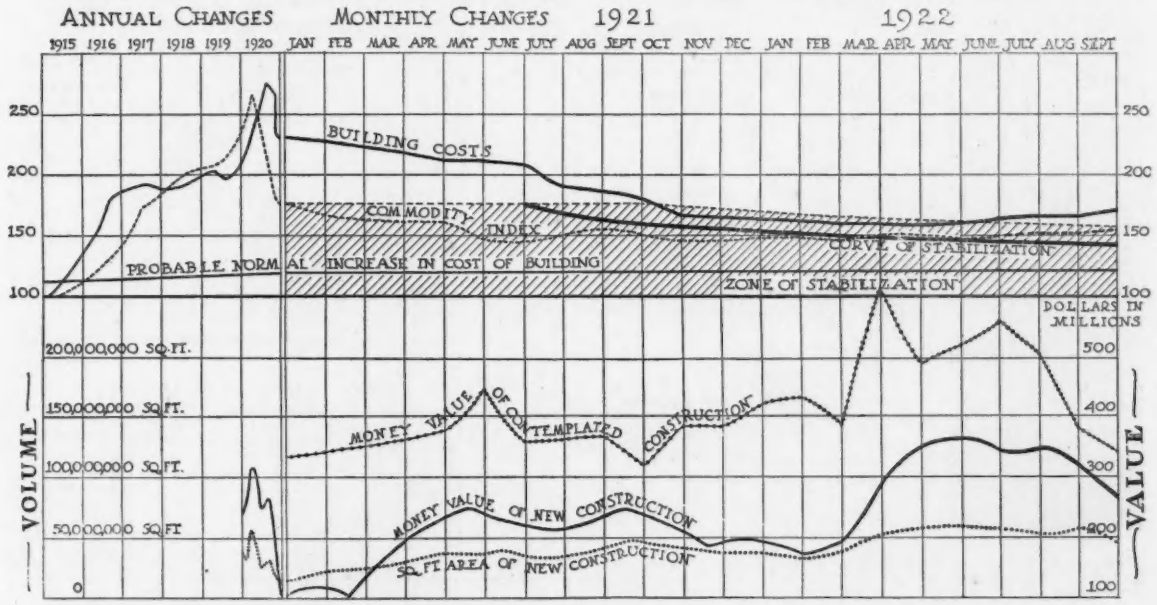
The Building Situation

THE past few weeks have recorded only a slight decrease in the volume of construction, indicating that the drop recorded in August and September has been seasonal rather than primarily due to increased costs.

Residential construction is holding up well in volume, particularly in the small house field. An analysis of the rental situation as it affects apartment buildings shows that not for many years have there been so many vacant apartments on October 1 in our larger cities. Rentals are being maintained at high levels, however, principally to justify sales prices on buildings that have passed through speculative hands. The general trend of the housing situation indicates less activity in apartment building but more interest in fine residences for next year. The building of moderate cost houses will undoubtedly be resumed actively early next year.

Engineering contractors report unusual activity in power projects and electric service buildings. Architects are very busy in the middle west and many are active in the east, although general business activity for the architect has been somewhat slower to arrive in that section. The type of work under planning for next year is excellent.

There has been a sharp increase in the cost of building, probably greater than 10 per cent in the last few weeks. Active projects are now feeling this increase, and it is definitely evident as jobs are re-estimated. It is confidently anticipated that this is only a temporary condition, however, due to the coal and labor difficulties and the readiness of some material dealers and possibly some manufacturers to take advantage of logical excuses for price raising in the midst of heavy demand. In all probability the cost of building will resume a gradual downward trend by next spring, when production facilities will be greater than ever before.

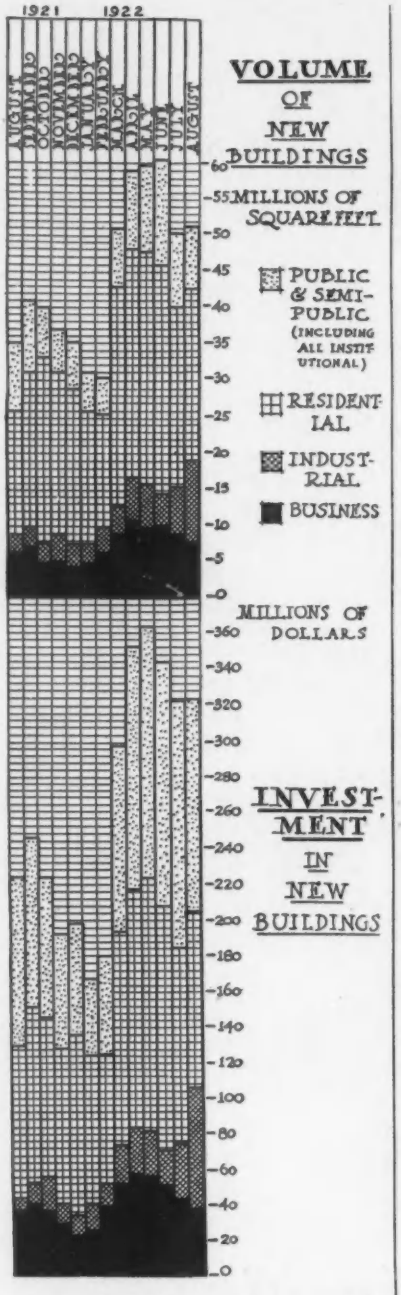


THIS chart is presented monthly with trend lines extended to the most recent date of available information. Its purpose is to show actual changes in the cost of building construction and the effect upon new building volume and investment as the *index line of building cost* approaches or recedes from the "curve of stabilization."

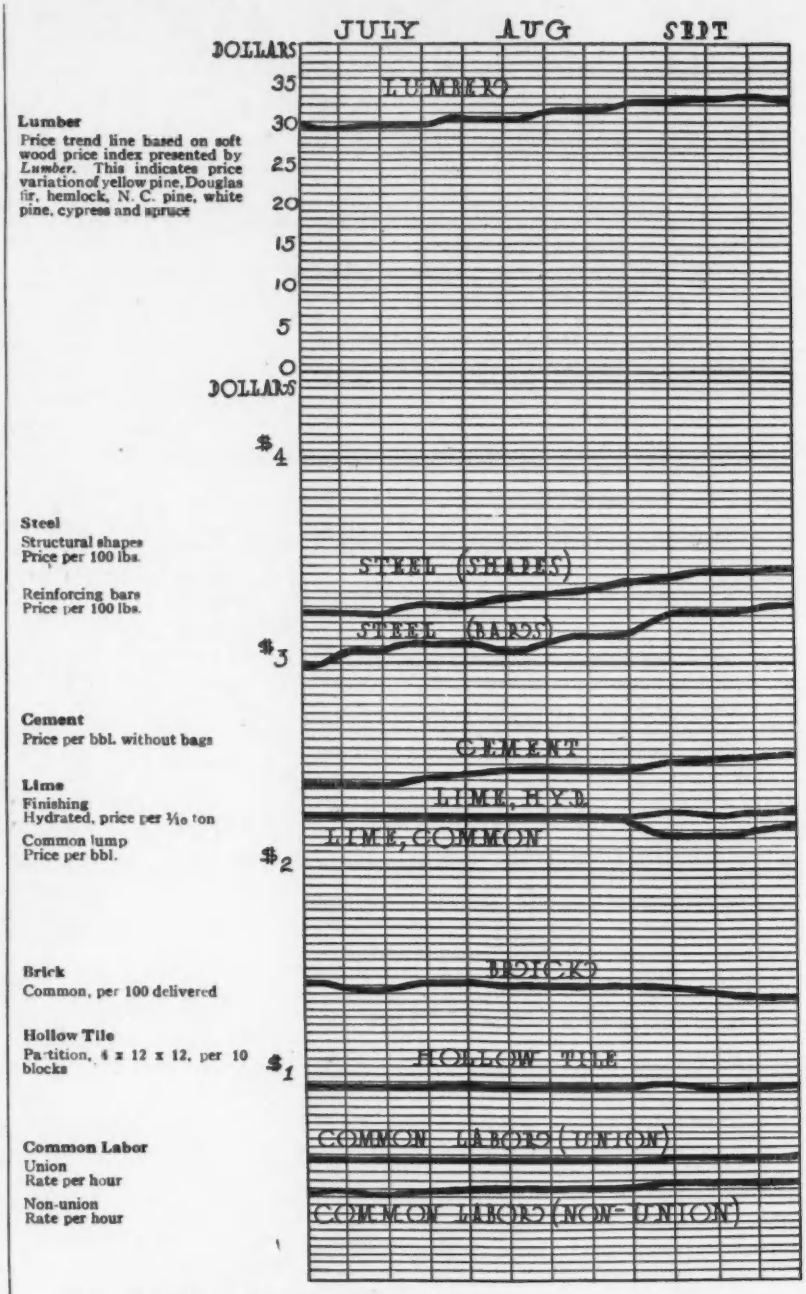
The CURVE OF STABILIZATION represents the building cost line at which investors in this field may be expected to build without fear of too great shrinkage in the reproduction value or income value of new buildings. The index line representing actual cost of building entered the ZONE OF STABILIZATION in the fall of 1921. If this cost line passes *out* of the zone of stabilization, building volume will decrease materially.

The degree of the curve of stabilization is based on (a) an analysis of time involved in return to normal conditions after the civil war and that of 1812: (b) the effect of economic control exercised by the Federal Reserve Bank in accelerating this return after the recent war, and (c) an estimate of the probable normal increase in building cost.

Factors of Fluctuation in Building Costs



Analysis of new construction showing comparative importance of major building types in volume and investment.



Figures used in developing all trend lines represent average prices to contractors in following cities: New York, Chicago, Denver, Seattle, Minneapolis, Atlanta, Dallas and San Francisco

THE graphic chart at the right is presented for the purpose of showing fluctuations in the prices of a number of important building materials and in labor costs. These fluctuations cover a period of three months and are shown in each issue of the Service Section in order to make possible at least a partial analysis of the building cost trend line as shown on the preceding page.

While the volume and investment chart shows a continuation of the seasonal decline and the effect of rising costs, it is interesting to realize that each month from July to September has shown a greater volume of construction than any similar month for many years past.

The trend of lines in the materials chart indicates basic reasons for the recent advance on building costs. As the winter season opens, practically all basic building materials and labor show a continued tendency to increase in price. It is confidently anticipated, however, that a reaction will again turn the trend of building costs into the long downward swing which must certainly represent the future of this line.

Eradication of the after-effects of the recent coal and rail disturbances will contribute definitely to this result. In view of the curtailed production of some commodities, notably lumber, because of the scarcity of cars, it is gratifying to note comparatively stable price conditions and indications that efforts are being made to prevent any "gouging" of the consumer.

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of Sept. 1, 1922. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

Commodity	Size or Condition	Unit	Mass. Fitchburg	Mass. Haverhill	Conn. New London	New York Buffalo	New York Poughkeepsie	Penn. Pittsburgh	Penn. Erie	Md. Baltimore	Va. Richmond	W. Va. Fairmont	S. C. Columbia	Ga. Savannah	Detroit	Mich. Pontiac	Mich. Lansing	Mich. Bay City	Wis. Milwaukee	Iowa Waterloo
Common Brick		1,000	$21.00	$25.00	.....	$20.12	$18.00	$15.00	$15.75	$20.00	$17.50	$24.00	$12.00	$14.00	$17.50	$14.40	$14.00	$13.00	$12.00	$18.90
Portland Cement	Excl. of containers	Bbl	3.20	3.55	$3.28	2.78	2.90	3.35	3.20	3.05	3.65	3.10	3.50	3.50	3.40	.....	3.75	3.15	2.40	2.60
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M.	65.00	63.00	63.00	.....	45.00	52.00	49.00	39.00	.....	45.00	.....	25.00	55.00	43.00	48.00	39.00	38.00	45.00
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39.00	45.00
N. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M.	.....	.....	.....	.....	.....	.....	49.00	.....	30.00	45.00	20.00	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M.	52.00	40.00	40.00	.....	37.00	49.00	50.00	.....	33.00	45.00	23.00	.....	75.00	48.00	45.00	37.00	.....	45.00
Y. P. Flooring E.G."C"	1x4-10'-16'	M.	.....	100.00	80.00	.....	107.50	.....	110.00	.....	75.00	.....	75.00	.....	100.00	.....	75.00	.....	80.00	80.00
Douglas Fir V.G. No. 2	1x4-10'-16'	M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100.00	.....	.....	.....	75.00	80.00
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	6.30	7.50	.....	6.00	.....	7.25	6.50	.....	.....	.....	6.00	.....	.....	6.50	.....	6.50	.....	6.50
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.00	.....	.....	.....	.....	.....	.....	6.50
Composition Shingles	Crushed slate surfaced	100 sq. ft.	7.50	7.75	6.50	.....	6.00	6.25	5.50	.....	.....	.....	6 25	6.50	6.50	6.00	7.50	6.00	6.50	7.50
Gypsum Plaster Board	⅜"	1,000 sq. ft.	.....	45.00	50.00	45.00	45.00	37.50	45.00	45.00	40.00	40.00	35.00	40.50	.....	40.00	45.00	38.00	30.00	32.00
Lime	Hyd. Com.	Ton	18.00	.....	.....	16.00	22.00	20.00	20.00	15.00	17.00	15.00	20.00	22.50	18.00	15.00	20.00	16.50	.....	25.00
Building Sand		Cu. yd.	1.80	2.20	1.50	1.28	2.00	2.50	3.60	2.00	1.40	3.75	1.00	2.20	2.50	1.50	1.80	2.00	2.00	1.75
Crushed Stone	¾"	Cu. yd.	3.00	2.50	.....	1.30	2.40	5.50	3.00	.....	2.00	6.25	2.75	5.50	2.50	.....	2.80	4.00	2.25	3.50
Window Glass	Single A 10"x12"	50 sq. ft.	5.50	.....	.....	3.90	.....	.....	.....	4.20	4.50	4.40	6.40	.....	.....	.....	.....	5.15	5.25	6.00
Hollow Tile	8"x12"x12"	Each	.27	.28	.25	.22	.24	.21	.20	.21	.....	.22	.19	.....	.21	.17	.16	.15	.13	.13
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	.....	.....	.....	58.80	47.00	80.00	.....	74.00	.....	.....	.....	.....	.....	52.00	.....	51.00	.....	50.00
Steel Pipe	1" galv.	100 ft.	.....	.....	.....	10.00	9.00	8.50	.....	9.00	7.50	11.00	9.46	.....	8.93	8.50	.....	9.75	10.50	12.00
Reinforcement Bars	½" square	100 lbs.	.....	.....	4.25	.....	4.50	3.00	.....	3.25	3.25	3.00	4.25	3.50	.....	.....	3.50	.....	.....	3.20
Structural Steel	Fab. 6" I-beams	100 lbs.	5.50	6.00	.....	.....	.....	2.70	.....	.....	3.75	4.50	4.10	.....	.....	.....	3.50	3.10	.....	.....
Gypsum Plaster	Neat	Ton	.....	.....	.....	.....	20.00	22.00	24.00	22.50	22.00	16.00	20.00	.....	19.00	.....	17.50	.....	16.50	18.00
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	.....	13.00	13.50	.....	.....	12.50	11.50	.....	.....	.....	17.10	.....	16.50	21.00	16.00
Tar Paper, Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	3.25	2.50	.....	2.00	2.50	1.95	2.00	.....	.....	.....	.....	1 95	1.95	2.75	3.00	2.70	.....	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.25	1.60	.....	1.05	1.25	1.20	1.00	1.25	.95	.90	1.00	.80	.80	1.00	.....	1.00	1.00	1.50

Commodity	Size or Condition	Unit	Iowa Des Moines	Iowa Council Bluffs	Mo. St. Louis	Mo. Kansas City	Ohio Cleveland	Ohio Akron	Ohio Dayton	Ohio Toledo	Ohio Cincinnati	La. New Orleans	La. Shreveport	Texas San Antonio	Ariz. Tucson	Wash. Spokane	N Dak. Grand Forks	S Dak. Sioux Falls	S Dak. Aberdeen	Calif. Sacramento
Common Brick		1,000	$16.00	$16.50	$14.50	$16.50	$16.00	$14.50	$17.00	.....	$18.00	$14.00	$13.50	$17.00	$12.00	.....	$15.00	$15.00	$16.00	$17.00
Portland Cement	Excl. of containers	Bbl.	.....	.....	2.85	2.90	3.20	3.25	3.50	.....	2.76	3.10	3.50	3.10	4.40	.....	3.80	3.00	.....	3.30
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M	44.00	43.00	46.00	46.00	.....	50.00	45.00	$49.00	44.00	45.00	44.00	45.00	.....	.....	.....	.....	.....	.....
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M	44.00	42.50	43.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	55.00	$25.00	50.00	47.50	44.60	39.50
N. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Common Boards No. 1	1x6	M	42.00	41.00	49.00	51.00	49.00	50.00	.....	.....	.....	35.00	50.00	49.50	50.00	27.00	46.00	44.00	41.00	40.50
Y. P. Flooring E.G."C"	1x4-10'-16'	M	.....	96.00	74.00	72.50	96.00	95.00	90.00	80.00	100.00	82.70	.....	.....	.....	.....	95.00	.....	.....	.....
Douglas Fir V.G. No. 2	1x4-10'-16'	M	95.00	94.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92.50	70.00	.....	80 00	81.00	76.50
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	6.00	6.00	7.18	6.50	5.76	7.00	5.20	6.40	5.40	.....	7.50	.....	.....	.....	.....	5.50	5.75	.....
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.00	.....	6.50	.....	6.50	.....	.....	.....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	.....	8.00	6.37	5.80	6.00	.....	6.00	6.75	.....	6.71	7.50	.....	.....	.....	8.00	7.50	8.00	.....
Gypsum Plaster Board	½"	1,000 sq. ft.	35.50	.....	42.25	45.00	46.00	.....	32.50	42.50	.....	40.00	45.00	.....	55.00	.....	60.00	.....	.....	.....
Lime	Hyd. Com.	Ton	27.50	.....	20.00	.....	15.60	17.60	14.00	18.00	15.80	14.00	27.50	19.00	.....	.....	.....	.....	25.00	.....
Building Sand		Cu. yd.	.....	3.50	2.60	.....	2.50	1.75	1.80	.....	1.80	1.45	2.00	2.25	1.15	.....	3.00	1.50	3.25	1.50
Crushed Stone	¾"	Cu. yd.	3.00	5.00	.....	3.00	.....	3.25	2.50	.....	2.20	.....	.....	1.80	3.00	.....	.....	.....	.....	2.75
Window Glass	Single A 10"x12"	50 sq. ft.	4.50	.....	3.90	4.50	.....	4.20	4.50	.....	.....	4.00	4.50	.....	5.40	.....	4.80	.....	.....	.....
Hollow Tile	8"x12"x12"	Each	.....	.15	.....	.22	.....	.17	.18	.....	.18	.17	.25	.20	.18	.....	.....	.....	.....	.....
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	.....	.....	.....	.....	.....	.....	.....	.....	.....	91.75	59.00	.....	76.00	.....	46.00	.....	.....	.....
Steel Pipe	1" galv.	100 ft.	9.37	.....	.....	.....	.....	9.51	8.57	.....	.....	9.86	9.40	.....	11.70	11.93	8.00	.....	.....	10.85
Reinforcement Bars	½" square	100 lbs.	2.68	3.15	.....	2.90	.....	3.25	3.00	.....	.....	4.00	4.00	.....	4.00	4.10	3.80	4.00	.....	3.05
Structural Steel	Fab. 6" I-beams	100 lbs.	.....	3.60	4.00	3.85	.....	3.25	3.25	.....	.....	.....	4.00	.....	.....	.....	5 90	5.00	.....	4.30
Gypsum Plaster	Neat	Ton	.....	17.50	18.50	15.50	.....	19.00	19.00	.....	.....	25.00	24.00	.....	23.00	.....	.....	15.20	20.00	.....
Roofing Slate	No. 1 Ribbon	100 sq. ft.	.....	.....	.....	.....	.....	11.00	16.5	.....	.....	16.50	12.00	.....	.....	.....	.....	.....	.....	.....
Tar Paper, Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	2.63	2.80	.....	.....	2.50	.....	2.25	.....	.....	.....	2.60	.....	3.25	.....	.....	2.95	2.25	.....
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	1.08	1.25	.94	.....	.90	.....	1.15	.....	.....	.94	1.50	.....	1.75	1.13	1.50	1.30	.....	1.00

THE FORUM CONSULTATION COMMITTEE

A group of nationally known experts on various technical subjects allied to building, providing a direct service to architects

THE editors of THE ARCHITECTURAL FORUM have been fortunate in obtaining the co-operation of the following recognized experts who constitute THE FORUM Consultation Committee. This Committee provides a service of the greatest value to subscribers in addition to the usual editorial service, and architects who seek information on specific questions in these various fields are invited to present inquiries.

The basis on which this Committee has been organized is:

(*a*) That each Committee member shall be a representative leader in his line;
(*b*) That no Committee member has affiliations with any manufacturer;
(*c*) That no Committee member will be called upon for detailed service excepting by special arrangement;
(*d*) That a special editorial article on a subject represented under each of the headings below shall be prepared during the year by the Committee member.

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Comptroller, Metropolitan Life Insurance Co.

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WILLIAM L. GOODWIN
Assistant to the President and in charge of activities of the Society for Electrical Development

This Society is organized to promote accurate knowledge of the practical application of electricity. Its activities extend from the simple problems of household equipment to highly developed electrical plants. Particular attention is given the development of provision for electrical service in buildings.

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S. J. WILLIAMS
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FREDERICK WALTER IVES, B.S., M.E.

Professor and Head of Department of Agricultural Engineering, Ohio State University. Consulting Agricultural Engineer, Columbus, Ohio.

Specialist in land drainage, soil improvement, surveys, farm arrangement for economical production, purchase of equipment and economical layout of farm buildings with special reference to interior arrangement.

Address inquiries to committee members, care THE ARCHITECTURAL FORUM, 103 Park avenue, New York

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

EFFECT OF OBSOLESCENCE ON THE USEFUL LIFE OF OFFICE BUILDINGS

AN interesting presentation of this important subject was recently made by Earle Schultz, President of the National Association of Building Owners and Managers in *Buildings and Building Management*. To determine the effect of age on the income and expenses of office buildings, reports were obtained from 155 buildings. The charts shown herewith indicate results.

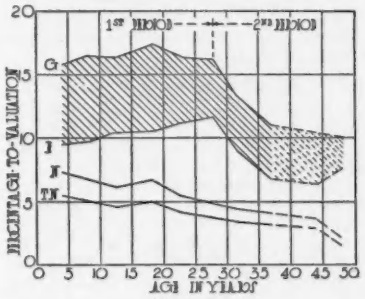

Chart I

"It will be seen from Chart I that the life of an office building may be divided into two periods.

"Period 1 extends from the erection of the building to about the 28th year. During this period the gross income is nearly constant. The expenses, however, rise continuously with a corresponding falling off in the net return. This period represents the useful and profitable life of an office building, during which it is earning an adequate return on the investment. During most of this period, the buildings are able to maintain themselves as first-class buildings housing the best grade of tenants.

"Period 2 extends from the 28th year to the end of the building's life. During this period the gross income of the building falls very rapidly as also do its operating expenses, while the net income continues to decline at a somewhat faster rate than during the first period. At the beginning of this period the building finds that through the action of obsolescence in any one or more of its several forms it is losing its better class of tenants and that it is impossible for it to maintain its income at its previous level. Because of this falling off in income, it must necessarily reduce its operating expenses in proportion by giving a cheaper grade of service, thus becoming a second grade building. In spite of all that can be done to reduce operating costs, the ever-increasing extent of repairs and replacements necessary in an old building serve to increase expenses, with the result that if the building continues in existence it soon becomes a non-producer and is very often operated at a loss.

"Period 2 necessarily ends with the life of the building, which occurs when obsolescence has progressed so far that the building is torn down to be replaced by a new structure. Later in this report many illustrations will be cited of buildings thus torn down and replaced at ages varying from 15 to 40 years. Because of the fact that when a building has arrived at the second period of its life and it is only a question of time when it will have to be torn down, its investment value declines very rapidly and is very often extinguished entirely. That is, whereas if a building is sold during the first period of its life, it will bring a price somewhere near its cost; if it is sold in the second period of its life, it will bring a very much smaller price, and very often will not be considered as adding any value whatever to the land on which it stands. As a consequence, while a building in the second period of its life may for a time under favorable conditions continue to be operated at a small margin of profit, obsolescence will have largely or wholly destroyed its sale value.

"The solid line represents the actual five-year averages, and the dotted line a theoretical curve drawn through these averages. From these curves it will be seen that during the early years of its life, the value of the average building is equal to the value of the land on which it stands. This ratio, however, increases more and more rapidly until at the age of 50 years the value of the land has become six times the value of the building. In other words, if a lot now valued at $100,000, for instance, requires as an adequate improvement a building costing $100,000 or more, then after a period of 50 years when the value of this lot has become approximately $500,000, any improvement thereon to be adequate must have a value of $500,000.

"A study of the present ratio between land and building for buildings of different ages will indicate the effect which the growth of the business district of a city has in rendering buildings inadequate improvements of the land. This has been done by taking the ratio between land and building for all the buildings reporting, and grouping them by ages to obtain five-year averages as previously explained. The averages thus obtained are indicated on Chart II. On this chart the two curves marked 'AA' represent the increasing ratio between land and building as the age of the building increases.

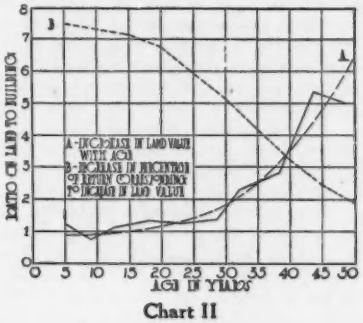
B
A
A-DECREASE IN LAND VALUE WITH AGE
B-INCREASE IN DEPRECIATION
C-RETURN CORRESPONDING TO INCREASE IN LAND VALUE
RATIO OF LAND TO BUILDING
0 5 10 15 20 25 30 35 40 45 50
AGE IN YEARS

Chart II

Obsolescence in Type of Construction

"It is generally believed that the present type of office building represents the highest possible development of these structures, and consequently that they will not suffer from obsolescence in type as have the older buildings. A study of the growth of the office building and of the purpose and plan of its design will easily convince anyone that it has by no means arrived at a state of perfection.

"There has been very little office building construction throughout the country for the past six years, due to the excessive cost of labor and material, so that the supply of office space in most cities is, at the present time, inadequate. As the cost of construction gets back to normal and as business conditions improve, there will be a revival of office building construction, and out of this revival is sure to come a new type of building. If office building owners and managers have learned any one thing during the past period of inflation, it has been the necessity of economical operation. The new type of office building will, therefore, be built primarily as an investment and designed not only for efficiency of layout to produce the greatest gross income, but also for economy of operation to give the lowest operating cost. Forerunners of this type are already appearing. These newer buildings are thoroughly standardized in their layout, and their lighting, plumbing and heating arrangements are such as to permit of the moving of interior partitions without affecting any

of the mechanical equipment of the offices. In the proposed Dexter-Horton Building, to be erected next year in Seattle, this standardization has been carried to a high state of development. The cost of alterations in this building should be but a small percentage of that experienced by the average building today. This plan of standardization was also adopted in the General Motors Building in Detroit. In one regard the latter building has gone a step further. In it they are using movable steel partitions that can be taken apart and reassembled for any new layout of office space desired. In fact, quite a number of buildings in cities requiring all steel interior construction are using these movable partitions. They are as yet expensive in their first cost and are not, by any means, perfect in their design. It is only a question of time, however, until partitions of this sort will be developed that will have the greatest flexibility and will be very economical in their operation.

"One of the difficult problems of operation of the present office building is that of heat and ventilation. The office building is one of the most wasteful users of heat, because its use is entirely in the hands of the tenants who waste it without regard to cost. The new type of building will probably be mechanically ventilated throughout (as is the Chicago, Burlington and Quincy office building in Chicago) with double glass windows permanently closed. In this way the air in the office building will be at all times not only purified, but either heated or cooled to the proper temperature and moistened to the proper humidity. A building so equipped would add very materially to the efficiency and health of its occupants, and consequently would attract tenants from buildings not so equipped. Such an installation would also reduce the operating cost of heating by eliminating waste, and it would, by keeping out the dust-laden air, also eliminate much of the expense of cleaning and decorating.

"The recent Burlington fire in Chicago, in which eight floors of this very high type of fire-proof building were completely gutted by an exterior fire which came in through the windows of the building and was provided with fuel by the wooden furniture in the building, will probably lead to two new features in the coming type of building. One will be some method of protecting the windows of an office building from exterior fire exposure; the other the exclusion of all wooden furniture. It will be only through the adoption of these two provisions that an office building can afford complete fire protection to its tenants."

STANDARDIZING LUMBER AND METAL LATH

"THESE notes regarding progress of standardization in building materials appear in a recent issue of *Engineering News-Record:*

"Agreement has been reached by the central committee on lumber standards, which was appointed by the several branches of the industry last July, to formulate a program for simplification of the industry. It is planned (1) to collect and analyze all information that will aid in the simplification of sizes, grades, and names of lumber products; (2) to submit these findings to the producers, distributors, and consumers by means of the associations in these fields; (3) to promote discussion of the questions involved and to harmonize differences of opinion; (4) to establish a grade-marking and inspection service that will guarantee to the consumer the quality and quantity of his lumber purchases; and (5) to arrange a national conference of representatives of all branches of the industry which would finally adopt specific practices in these fields that will conform to the requirements of the Department of Agriculture and the Department of Commerce.

"Following the reduction in standard sizes of paving brick and lumber initiated by the Department of Commerce, work is now under way in the standardization of metal lath. A reduction from 71 to 9 in the number of weights and styles of lath was recommended at a preliminary conference held at the Department of Commerce Oct. 2. The manufacturers have worked out a plan for this reduction which they believe will be acceptable to contractors and other consumers.

"A general conference will be held Dec. 12 to which manufacturers, distributors and consumers will be invited. At that conference, it is expected that a definite conclusion will be reached."

BASIC DEFINITIONS AND CLASSIFICATIONS OF LUMBER

THE Central Committee on Lumber Standards, which met for four days during the first week of October in Washington, has assembled information on trade practices in all parts of the country, and out of its work it is hoped standards governing the production and use of lumber will come. Some of its recommendations have already been placed before the lumber industry, and perhaps of most importance are the suggested standard classifications of use, size and manufacture.

It is also suggested that there be a single standard name to identify each important commercial species, and that such standard names be exclusively used in the grading and inspection rules and in official association publications, and that their universal recognition throughout the lumber trade be promoted. A suitable outline of such species names is still to be prepared.

The definitions already agreed upon in committee are:

I. Use Classification

Lumber is the product of the saw and planing mill, not further manufactured than by sawing, resawing, and passing lengthwise through a standard planing machine, crosscut to length, and matched.

Lumber is classified as (1) yard lumber, (2) shop or factory lumber, and (3) structural timber. Different grading rules apply to each class of lumber.

(1) Yard lumber is lumber that is less than 6 inches in thickness and is intended for general building and construction purposes. The grading of yard lumber is based upon the use of the entire piece.

(2) Shop or Factory lumber is lumber intended to be cut up for use in further manufacture. It is graded on the basis of the percentage of the area which will produce a limited number of cuttings of a given minimum size and quality.

(3) Structural Timber is lumber that is 6 inches or over in thickness and width. The grading of structural timber is based upon the strength of the piece and the use of the entire piece.

Yard lumber is classified roughly as (a) Finish and (b) Construction lumber. There is no sharp line between finish and construction lumber. The medium grades may be used for either purpose.

(a) Finish is yard lumber of the higher grades in which appearance, perfection of the surface, and finishing qualities are primarily the basis on which the grade is determined. The higher finishing grades are more suitable for "natural" or transparent finishes while the lower finishing grades are smooth and free from serious defects and are particularly adapted to the use of paint.

(b) Construction lumber is yard lumber which is graded primarily upon the basis of its strength, as affected by defects, and its fitness for general construction purposes.

II. Size Classification

(1) Strips are yard lumber less than 2 inches thick and under 8 inches wide. Strips are usually manufactured into matched and patterned lumber.

(2) Boards are yard lumber less than 2 inches thick and 8 inches or over wide.

(3) Dimension includes all yard lumber excepting boards and strips and timbers; that is, yard lumber 2 inches and under 6 inches thick and of any width.

(a) Planks are yard lumber 2 inches and under 4 inches thick and 8 inches and over wide.

(b) Scantlings are yard lumber 2 inches and under 6 inches thick and under 8 inches wide.

(c) Heavy Joists are yard lumber that is 4 inches and under 6 inches thick and 8 inches or over wide.

(4) Timbers are lumber 6 inches or larger in their least dimension.

III. Manufacturing Classification

Manufactured lumber is classified as (1) Rough, (2) Surfaced, and (3) Worked.

(1) Rough lumber is undressed lumber left as it comes from the saw.

(2) Surfaced lumber is lumber that is dressed by running through a planer. It may be surfaced on one side (S1S), two sides (S2S), one edge (S1E), two edges (S2E), or a combination of sides and edges (as S1S1E, S2S1E, or S1S2E).

(3) Worked lumber is lumber which has been through a matching machine, sticker or moulder. Worked lumber may be (a) matched, (b) shiplapped or (c) patterned. Patterned lumber is usually matched or shiplapped.

(a) Matched lumber is lumber that is edge dressed and shaped to make a close tongue and groove joint at the edges or ends when laid edge to edge or end to end.

(b) Shiplapped lumber is lumber that is edge dressed to make a close rabbeted or lap joint when laid edge to edge.

(c) Patterned lumber is worked lumber that is shaped to a patterned or moulded form.

BUILDING COSTS ON PERMANENTLY HIGHER SCALE

TO all who follow the trend of building it is quite evident that building costs will remain on a higher plane than existed before the war. Graphic records of the cost increases in the elements that make up building cost are always valuable in pointing out to clients the reasons for continued high costs, and we present as of interest some charts based on those appearing in *The Constructor* for October, 1922.

In commenting on them *The Constructor* says: "It will be evident from the cost of building diagram that building costs are now 75 per cent greater than they were in 1913, and exceed the corresponding figures for any month prior to July, 1919. (The solid line in this diagram shows building costs, and the dotted line general wholesale commodity costs over the same period.)

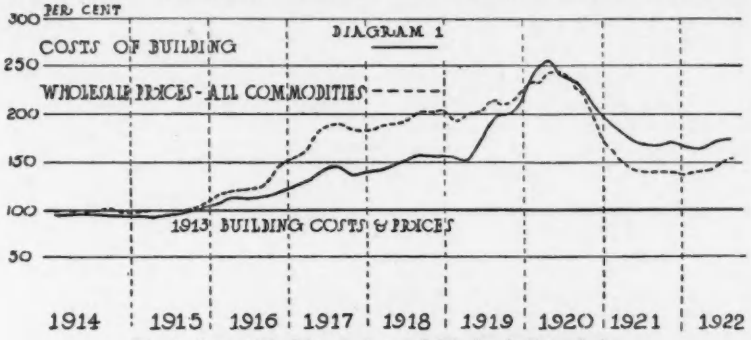

Fig. 1. Cost of Building Index and Wholesale Price Index

they are not quite so high now as the price of building materials or the cost of completed buildings. The commodity index includes a number of important items, such as zinc, tin, copper, and rubber, which for reasons easily explained in each case are now selling at figures below pre-war prices. This helps to explain why the index of wholesale prices is at a lower point than that of building materials.

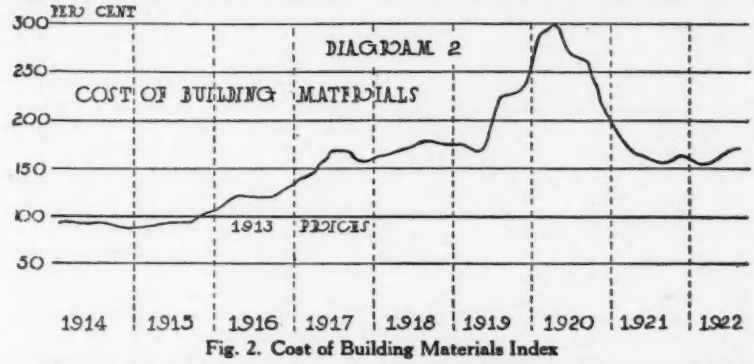

Fig. 2. Cost of Building Materials Index

"Diagram 2 shows the index of building material prices computed by the Department of Labor, and is a composite of prices of some 40 different materials for which quotations are obtained from a large number of different points. Diagram 3 shows how wages in the building trades have varied in the same period and shows averages of the wages paid in 11 of the building trades in 8 representative cities. The index of the cost of building in Diagram 1 is a composite of the material index and wage index in which the former represents 60 per cent, and the latter 40 per cent of the final result. These diagrams and the index of wholesale prices of all commodities show that practically nothing can be purchased today at pre-war prices. The commodity index is a composite of the prices of over 400 different articles. It is similar in shape to that of the building cost line; average prices did not go quite so high in 1920, and

"It will be noted that each of the diagrams shows an increase in prices during the past few months. This is what always happens to prices when business is recovering from a depression. It does not mean that prices are going back to where they were in 1920, and it probably does not mean that they are going very much higher than they now are, but it is a very strong argument for the contention that prices have settled down to a relatively permanent new price level. In other words, prices for some years to come will probably fluctuate in accordance with the ebb and flow of general business prosperity above and below some average point located at just about the present level."

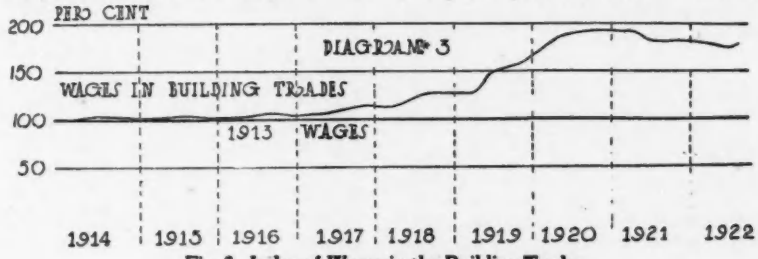

Fig. 3. Index of Wages in the Building Trades

It may well be that some time in the future, perhaps 20 years from now, the general average of prices may again be down to the 1913 figure or below it. But if we are to judge by past history, building costs will probably not go down in equal ratio. In the Civil War period just as in the World War period, the cost of building increased enormously, and this increase was due very much more to higher prices for materials than it was to higher wages. Although wages went up more slowly and relatively much less, they afterwards came down more slowly and relatively not so far as the price of materials. Following the Civil War peak and the subsequent depression there was, beginning with 1870, a period of about two and one-half years during which the price of building materials increased and also the cost of building. We seem to be now experiencing the beginning of a similar rise in prices. It is not safe, however, to figure on a close parallel between the two periods but we may conclude, that the extreme price changes of the war period are passed; that if prices in general again reach their pre-war level it will only be after many years; that wages will probably never go down to their pre-war level; and that the total cost of building, likewise, is permanently higher than it was before the war.

FACTS ABOUT BUILDING IN COLD WEATHER

ARCHITECTS will be interested in the following facts presented by C. S. Hill in a recent issue of *Engineering News-Record*. This analysis of the question of building in cold weather should encourage a decrease of seasonal activity:

"*Concrete and Building Construction*—Work on concrete structures of all kinds, and building operations generally, are commonly carried on in winter. Methods have been highly perfected and are now textbook knowledge. The conditions can be stated thus:

1. All concreting and building masonry operations can be carried on in winter with dispatch and absolute safety by heating the materials, housing in the work under construction and heating the enclosure.

2. Steel erection in winter is largely a function of storm and temperature. In any weather in which the workman can withstand the cold and work safely, structural steel can be erected.

3. Interior building work, plumbing, steamfitting, plastering, etc., can be performed in winter with little loss of efficiency.

4. Winter construction in building adds from 3 to 10 per cent to the cost according to the records of large concrete building contractors.

5. There is probably some greater risk of poor workmanship in winter concreting, masonry work and steel erection which calls for more exacting supervision and inspection.

"*General Conclusion*"—Nothing in the general conditions laid down, or in the conclusions from practice, place the problem of methods of winter construction beyond the range of easy solution by engineers and contractors. With very moderate inquiry and analysis it would be practicable to state recommended practices or standard methods. This investigation may precede more complex study of economic conditions because whether or not winter construction in general is economical there are always individual operations which it will pay to carry on in winter. In other cases, such as winter hauling in road building, it may be profitable to perform parts of the work in winter. As a broad generalization of the technical problem of winter construction it may be concluded that any kind of construction can be performed for which the owner is willing to pay cold weather prices.

"*Economic Problems*—The economics of winter construction do not lend themselves to the simple methods of handling the technical problem. As applied to a single structure the economic question is: Will possession of the structure at a definite earlier date be of enough value to pay for the extra cost of winter construction and leave a little over? Visualizing the construction industry as a whole the query is much the same. While, however, in the case of the individual structure the means are at hand for a ready answer there are inadequate, indeed almost no, data by which to determine the answer for the whole industry. Determination of these data is the great task of research before engineers and contractors and the *determination needs to be quantitative.*

"Briefly, winter construction appears to offer economies by (1) spreading overhead costs over 12 producing months instead of some less period; (2) reducing the seasonal employment of men in construction and the allied industries; (3) ironing out the peak in the curve of production of construction materials and equipment; (4) equalizing the demand on transportation agencies. The economic waste in all these activities due to reduction of construction during cold weather is universally admitted as a general truth but there are no determined figures of the amount of waste. These quantitative data are what research is called upon to supply. The reasons are:

1. The construction industry is the servant of the building public and evidence of specific savings is necessary to induce the building public to alter its practices.

2. Without full knowledge of the economic waste from winter idleness in construction the industry cannot stabilize its own business or assume the duty, which it must, of teaching the public."

DATA FOR THE PLANNING OF PUBLIC GARAGES

SOME interesting information has been recently published in the monthly bulletin of the Ramp Buildings Corporation of New York. This provides definite data on general dimensions for passenger car and truck garages:

"The average automobile is 15 feet long, and in designing a garage it is advisable to allot a space of 6½ x 15 for each car. This space is not and does not include any frontage occupied by columns. Fords are 11 feet long, and a few of the largest cars are 18 feet in length. There are now several cars of approximately the size of the Ford, and among these may be listed the Chevrolet and the Star. The Cadillac is about 16 feet over all, whereas most of the cars selling for around $1,000 are 12 to 13 feet long. The average garage aisle is 20 feet wide. On this basis the minimum width of a building is about 50 feet, although buildings occasionally are made 45 feet wide and even 40 feet. A 45-foot building is feasible provided the cars to be stored are not too large, but 40 feet is never satisfactory and it is better to abandon the idea of using it.

"It is rapidly becoming common practice to make the distance between floors 10 feet in the clear, and in some cases even 9 feet has been used with satisfaction. Extreme headroom is not desirable, because it increases the cost of the building unduly and also because it increases the steepness of the ramp or the distance which the elevator must travel. In a garage building solely for passenger cars there is no reason for making the floors more than 11 feet apart, and in most cases it is quite practical to make them 10 feet.

"Where it is necessary to arrange the columns for the economical storage of both passenger cars and trucks, interchangeably, it is a good plan to use four car bays with 6½-foot spacing. In other words, the net frontage of the bay will be 26 feet which will accommodate three large trucks, four delivery cars or four passenger cars.

"Trucks vary considerably in size. Their lengths run all the way from 11 feet for a Ford to approximately 22 feet for a large truck. The Ford will have a width of a little less than 6 feet while the big truck may be more than 7 feet broad. Five-ton trucks ordinarily require a space 8 x 20 or, in rare cases, 22 or 25. There are comparatively few five-ton trucks, however, compared to two-and three-and one-ton trucks. Therefore, in designing a truck garage it is usually not necessary to have very many spaces 8 x 22. The average two-or three-ton truck will occupy a space 7½ x 18.

"In designing a truck garage it is extremely desirable to know whether the bulk of the business will consist of the storage of small trucks or large trucks. Where this point cannot be determined, or where it is feared that the character of the truck storage may change, it is advisable to use a spacing of about 7 feet for the trucks making the bays four trucks wide, or 28 feet net. Such a bay will accommodate three very large trucks without wasting too much space and, on the other hand, will accommodate four trucks of medium and small sizes. Such a bay, for example, might house one delivery car, two one-ton trucks, and one three-ton truck.

"The tallest trucks require headroom of about 11 feet, whereas there are many trucks that do not require headroom of more than 9 feet, and smaller trucks and delivery cars may not need headroom of more than 8 feet. It all depends upon the type of body. It is a good plan, therefore, in designing a truck garage to design the first floor with sufficient headroom to accommodate the largest trucks; in other words, with a headroom of 11 feet clear for the first floor, the second floor with, perhaps, 9 feet clear, and the third floor with headroom of 8 feet net. At least, this arrangement will be feasible with a three-story building to house equal numbers of small, large, and medium sized trucks."

LUMBER MARKET OUTLOOK

PRESENT conditions in the lumber market are indicated by these notes from *Lumber*, October 13, 1922:

"The lumber market appears to be more stationary than it has been for some months, and this applies to prices as well as to movement of the product. The cleaning up of a large number of transit cars of softwoods that had for a time the effect of congesting distributing centers has almost eliminated the speculative factor, with the result that both mills and wholesalers are insisting that prices are about as low as they can be expected to go despite other conditions that might contribute to either a decline or advance. It is true that price concessions are being made here and there on a few items of softwoods for which demand is light and supply abundant, but in the main prices are firm throughout the list. In fact, along the entire Atlantic seaboard there is a strengthening tendency, North Carolina pine in particular being in very active demand with prices better than they have been for quite a while. That condition does not extend to the lake region, however, where considerable 'bargaining' is reported, nor to the central west, where retail dealers are still waiting for farmers to get in a better buying mood. Conditions along the Gulf and Pacific coasts show no change of consequence. The transportation situation is still a disturbing factor, but with no prospect of immediate relief so far as the railroads are concerned the lumber industry is accepting the situation as best it can and 'carrying on' in the same way, while being consoled to some extent by increasing orders from the railroads themselves for car and other materials.

"Conditions in the hardwood branch of the industry are about the same as they have been for some weeks, which is to say that both production and shipment are suffering from inadequate transportation facilities, demand is still good and price fluctuations are still upwards."

No. 21-9

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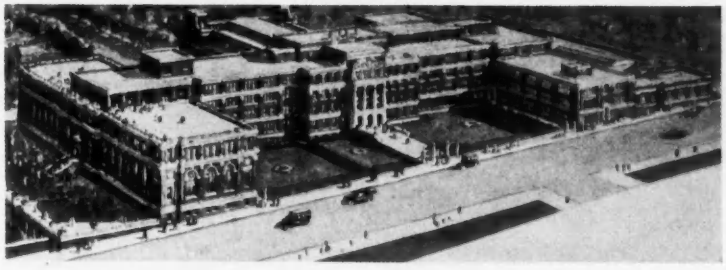

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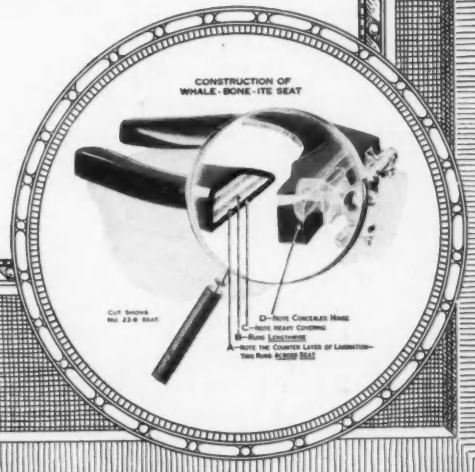

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Manufacturers' Catalogs and Business Announcements

CATALOG REVIEWS

DAVID LUPTON'S SONS CO., Philadelphia. "Steel Windows." Catalog 110.

The attention which is being given to the windows used in buildings of many different types is one of the secrets of the buildings' success. This is particularly true of schools, where windows must nowadays often conform to certain well defined requirements, of factory buildings and sometimes of hospitals, where in order to admit the necessary light and air large wall areas are often given up to windows which must be easily manipulated in order to be practical. All this has meant the increasing use of steel sash, and their obvious advantages are now causing their wider use in residences, apartment houses, office buildings and for certain modern types of store fronts. The chief advantage of steel over wood for use in windows lies of course in its strength, making possible a slender steel muntin which notwithstanding its slenderness possesses far greater strength than a wood muntin many times its size, with consequent advantages for admitting light; the same strength and the fact that a steel sash is welded into one solid piece of rolled metal provide a rigidity which precludes the danger of its being blown in or twisted from its setting by the force of the wind; it is also close-fitting and free from rattle.

In this booklet the manufacturers of several types of steel windows emphasize the value of their products for buildings of different types, particular stress being laid upon their "projected windows" which are especially useful since they may be opened in several ways, secured in a number of positions, and easily reached for cleaning upon both sides. The booklet also contains detailed drawings illustrating the requirements where such windows are used in walls of wood, concrete or brick. Although chiefly devoted to the subject of "Steel Windows," more or less information is given regarding other products of the company, such as counter balanced sash, pivoted sash, pressed steel door frames, toilet partitions, shelving and factory equipment.

RUSSELL & ERWIN MFG. CO., New Britain, Conn. "Catalog of Hardware, Volume 13." 382 pp., 8 x 10¾ ins.

There are few details of interior finish which are more important in the average building than its hardware, which includes the locks and other metal fittings for doors and windows, wall fittings where electric bells and signals are required, hooks for closets and wardrobes and the metal letters and numbers which are useful for various purposes. This substantial volume is the latest of a series of catalogs which list for the convenience of architects and builders the many patterns and sizes in which the widely known "Russwin" products are made.

The growth of good taste in building is illustrated in the constant improvement in the design of the details which are used in building equipment, and is proved by the definite tendency toward the use of period design which is evident in this volume. There are none of the historic styles of architecture likely to be used today for which well designed hardware is not illustrated, emphasis being placed upon patterns in styles sure to be the most used, such as the colonial, the Georgian and the Adam, and the simpler forms of Louis XVI.

It is necessary in correctly estimating the hardware for buildings to have a complete knowledge of the requirements, and essential, therefore, to have an accurate list or "schedule" of all the hardware needed. The contractor estimating this item is almost always obliged to compile such a schedule from the architect's blue prints and specifications, and in the preface to this catalog there are given some directions which should make for accuracy in compiling such schedules.

ANNOUNCEMENTS

Brentwood S. Tolan, architect, formerly of Fort Wayne, Ind., is now associated with De Curtins & Rawson under the firm name of De Curtins, Rawson & Tolan, with offices at 503 Opera House Block, Lima, Ohio.

Jacob Weinstein, architect, has removed his offices to the Metropolitan Bldg., State and Chapel streets, New Haven, Conn.

Wellington J. H. Wallace, Bartlesville, Okla., announces his appointment as architect for the Baptist Sunday School Board, of Nashville, where he will be located. Manufacturers' catalogs and samples relating to church and Sunday-school buildings are requested.

George Lawrence Smith, architect, announces the removal of his office to 5 Park street, Boston.

Harvey H. Warwick announces the removal of his office to 1108 Sixteenth street, N. W., Washington.

Norman Hatton announces that the partnership formerly known as Hatton, Holmes & Anthony has been dissolved. Mr. Hatton will continue the practice of his profession at the same address, 321-2 O. R. C. Bldg., Cedar Rapids, Iowa.

Smith, Hinchman & Grylls have moved their offices from the Washington Arcade Bldg. to the 8th floor of the Marquette Bldg., 243 Congress street, Detroit.

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